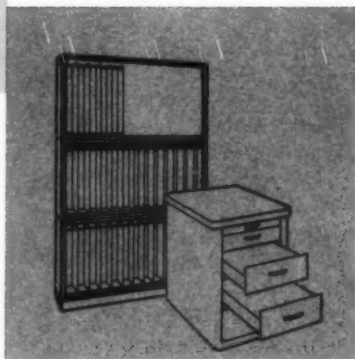
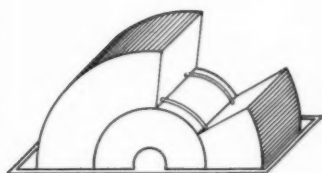
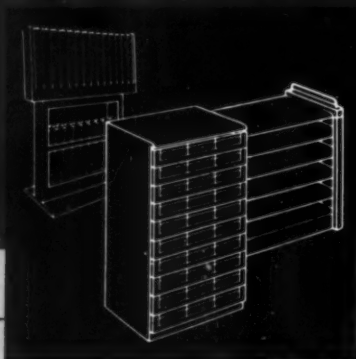


July/August 1958

Punched Card

DATA PROCESSING

including Punched Tape-Computers



**How to get the most from your
Forms and Accessory Equipment**

page 15

The Magazine of Automatic Office Methods and Management

Bendix G-15

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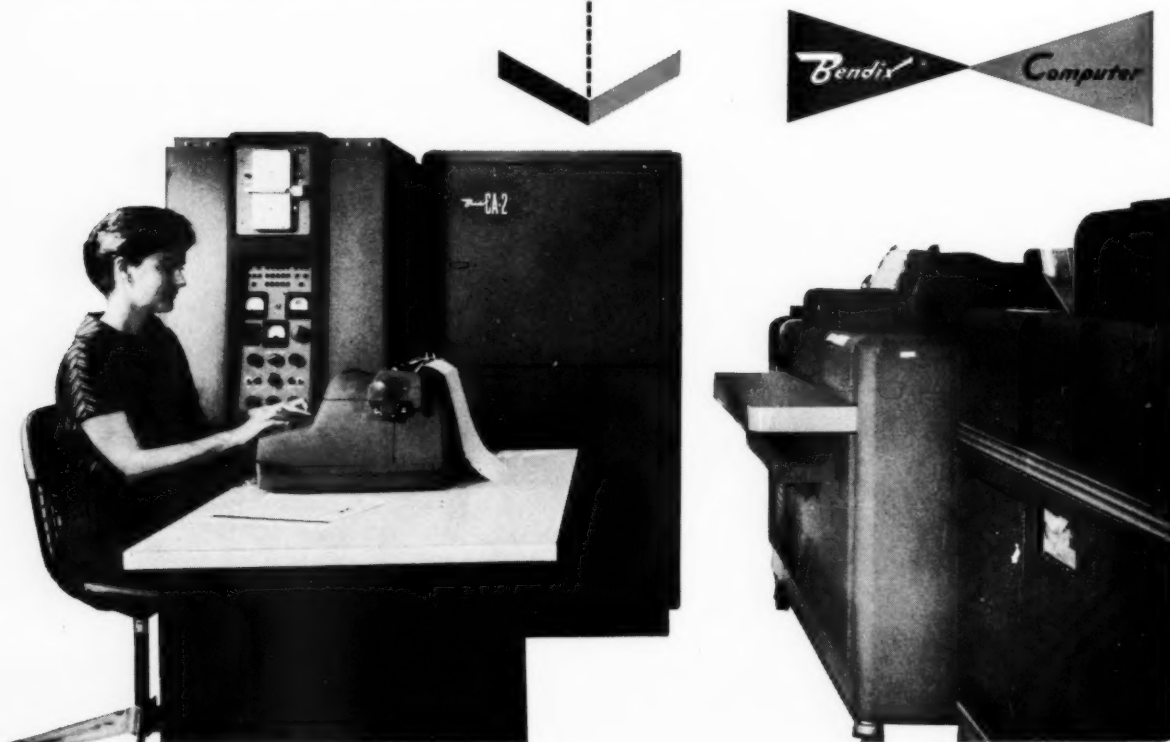
A full 80 columns of numeric, alphabetic, or special character information can be accommodated using only the CA-2 as a connecting link between the card equipment and the G-15. Any column of the card can contain any one of the three types of information.

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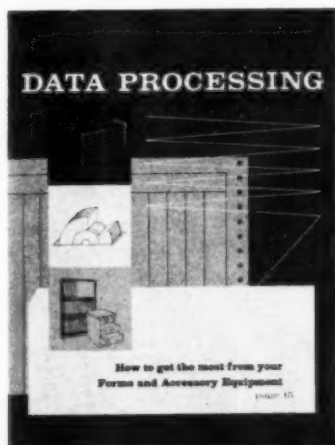
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Punched Card DATA PROCESSING

Formerly
Machine Accounting and Data Processing

Volume One • Number Five



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OBSERVATIONS . . .

from the publisher . . .

In March and April of this year we sent nearly 12,000 questionnaires to our readers. Before considering the results of the survey it is significant to note the response accorded such a lengthy questionnaire. After deducting the returned reports which were voided for any reason, a total remained of 2,341. Of these, nearly all answered every question pertinent to their operations. This is indeed a tribute to the personnel in this field, indicating that they are alert, inquisitive and highly cooperative.

A good distribution of types of business and industry were represented. Slightly over half of the respondents have a gross annual sales (or income) in excess of \$20 million and approximately half have one hundred clerical employees or more. Nearly a quarter of the respondents have more than one thousand clerical employees. The complete results of the survey will be presented in this magazine, starting with the next issue, and in *The Punched Card/Data Processing ANNUAL*, which will soon be off the press.

As the general breakdown given above indicates, this report truly represents a cross-section of activity. It is by far the most comprehensive ever undertaken in this field, and includes punched card, punched tape and computer equipment.

A great deal of comment was aroused by the first segment of this survey which appeared in the May/June issue, covering job title preferences.

Considerable action has already resulted from the statistics and commentary contained in this report. The reports to follow covering equipment use, applications, education and training, purchasing influences, and a summary of the myriad of comments received on all phases of activity, will give you valuable guidance for your operations.

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In automatic processing of data much concern is displayed over continuous forms, cards and tape (both paper and magnetic). This area, and that of related filing and storage equipment, may be very costly to data processing installations in time and money. Here are ways to avoid common errors and to remedy existing ones.

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Consultants exist because of their specialties, true, but client satisfaction is most important.
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If decisively applied, these eighteen factors will make the difference in successful competition.
- ▶ ANALYTICAL REMARKS by S. J. McLagan..... 12

If you can laugh at yourself you will enjoy this accomplished wit's "food for thought."
- ▶ AUDITING YOUR PRODUCTION CONTROL SYSTEM by A. D. Radin..... 20

In the successful application of a production control system it should be kept in mind that the system must contain all necessary factors, much the same as any accounting audit. Dissection and evaluation.
- ▶ SIMPLIFY THE PROGRAM AND SAVE by H. J. Johnson, Jr..... 25

A computer is not a machine with more and faster "hands" for data processing. It is a new tool and should be applied to current situations with the degree of creativity and freshness that is possible only with a fresh approach.

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THE AUTHORS

RAY MARIEN (*"The Forms Specialist's Place in Data Processing"*), a native New Yorker and business major at Columbia University, heads one of the largest forms programs in the country as forms and procedures manager for the Olin Mathieson Chemicals Corporation. His background in graphic arts dates back to his experience as a printing buyer for American Brake Shoe and later supervisor of their forms control program. A frequent contributor to business publications in the office field, Mr. Marien has also conducted seminars and lectured on his favorite subject on many occasions.

HERMAN M. LEVINE (*"Frustrations of a Forms Salesman"*) was with the Metropolitan Life Insurance Company from 1921 to 1928, where for four years he was associated with the installation and auditing of the industrial (weekly premium) accounting system. He went into the printing business as a salesman and office manager in 1929. He founded the Mercury Printing Company in 1933 and also formed the Systems Research Associates, a management consulting firm. Mr. Levine is recognized as one of the few authorities in "peg strip accounting." For the past fifteen years he has concentrated mostly on duplicating systems, forms control, business systems and procedures.

P. C. LUTZ, JR. (*"The Place of the Consultant"*) is the Supervisor of the Systems Division of Kurt Salmon Associates, Inc., now in their twenty-fifth year of operation as consultants to the apparel and textile industries. Mr. Lutz received his education at New York University where he majored in Accounting and Systems. He is a certified public accountant of the State of New Jersey, having served on the staff of Ernst & Ernst prior to his association with Kurt Salmon Associates. He has extensive experience in data processing studies, cost systems, budgetary control, financial and operating analyses, production planning systems, inventory controls, and distribution cost systems. Kurt Salmon Associates Inc. has headquarters in Washington, D. C., and maintains branch offices in Atlanta, Greensboro, Nashville, and New York City. They are members of the Association of Consulting Management Engineers.

RUSSELL H. JOHNSON (*"Criteria for Evaluating Data Processing"*), now Vice President of United States Trust Company, began working for the company in the mailing section in 1928 and has worked in various operating departments during the past 31 years, with emphasis on punched card systems and supervisory work. In 1955 he was appointed to the position of vice president in charge of all operating departments. He is a past chairman and presently a member of the trust operations committee of the trust division of the New York State Bankers Association and a member of the steering committee of the New York Clearing House Electronics Committee.

S. J. McLAGAN (*"Analytical Remarks"*) is Sales Promotion Manager of Suburban Propane Gas Corporation, Whippany, N. J. Mr. McLagan's entire business life has been in the field of sales. He has twenty years of service with Suburban Propane, starting as a salesman and working on the industrial, wholesale and domestic levels. He has been sales promotion manager for the last five years. Previously he was a salesman and later sales manager with various gas and electric companies in New York, New Jersey and Pennsylvania.

A. D. RADIN (*"Auditing Your Production Control System"*), has been associated with the field of production control since 1935 when he joined the Switch Gear Division of the General Electric Company where he served in various capacities until 1950. He then became associated with Remington Rand and, as a member of the industrial accounts division, dealt with the design of production control systems, working with all types of manufacturers. In 1955, Mr. Radin became regional manager of the Business Services Division of Remington Rand, with headquarters in Philadelphia.

HAROLD J. JOHNSON, JR. (*"Simplify the Program and Save"*), received his B.S. degree from Oklahoma State University in 1954. He served in the U. S. Army for 3½ years, principally as commanding officer of a bomb disposal detachment. He entered the graduate industrial management program at Purdue University in September, 1958, and recently received the degree of Master of Science in Industrial Management.

■ ■ ■

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The Place of The CONSULTANT

In today's modern business world the consultant is proving himself of value to many concerns.

EACH YEAR American firms pay in excess of 200 million dollars in fees to management consultant firms. Furthermore, this amount has been increasing steadily over the years. Apparently, more and more firms are finding it beneficial to utilize the services of the consultant. And thus the demand for his services has grown tremendously. But perhaps the most important reason for this increase in demand is that much of the consultant's business has been repeat business. That is, companies who have employed consultants to help solve one specific problem or group of problems have been so well satisfied with the results that they have called on the consultant for assistance with other problems. This is perhaps the most valid testimony as to the value of consulting services.

Difficulties or Problems to Be Aware Of

Many techniques, such as work measurement, market research, production planning, budgetary control and the like, have developed through the joint efforts of management consultants and leaders in industry. With the wide range of problems that the large or medium-size consulting firm is called on to solve, many of these firms have established separate departments which specialize in system problems. Our firm has had such a systems division for over fifteen years with the result that we have had an opportunity to view at first hand many of the problems that exist in the area of data processing. Some of the more prevalent problems are:

1. Through emphasis on sales and production efforts the company has grown to the point where

the volume of paper work has outstripped the effectiveness of the clerical procedures.

2. Clerical procedures have been developed only as a "necessary evil" of doing business, rather than as an important guide for control and planning purposes.

(continued on next page)

By P. C. Lutz, Jr.



3. Management is aware of the need for improving the effectiveness of the clerical functions, but has been hard pressed to find the time for pursuing these problems in the continuous and thorough manner necessary to develop a completely satisfactory solution.

4. There is a need for someone with a vast technical knowledge on a full time basis but for the relatively short period of time during which a practical system is being conceived and installed. Without this man, progress is often restricted to improvements in one or another department and a truly integrated system for the entire company is rarely obtained.

5. Office operations have been mechanized as a result of undue reliance upon machine or forms salesmen. Failure to exercise independent judgment, for whatever reason, often results in excessive machine or clerical costs.

6. A specific problem (*such as excessive back ordering*) often exists for which no satisfactory solution has been found by the company's own personnel.

7. The mechanized system produces a large volume of reports but the value of these reports is questioned by those for whom the reports are intended with the result that they are not used at all or ineffectively used.

Coping with these problems requires broad experience. Invariably, this experience, when coupled with the specific knowledge possessed by the company's own personnel, produces better results than could be achieved independently. Even if it were assumed that the company's personnel would eventually conceive independently the same ideas that would result from a joint undertaking, it would be a very slow process. Thus, any benefits to be achieved from a new system will be correspondingly postponed, making this approach a more costly one.

Under today's competitive conditions no company can afford to fall too far behind the others in its industry. Assistance is often desirable in determining the nature of controls and reports that are really needed for the operation of a particular business. An objective study and evaluation of the information presently available to management often can be done only by someone who has, in addition to the time and experience necessary, complete independence.

The Need for an Independent View

This completely unbiased approach is most important when appraising machinery requirements. The vast array of machinery and equipment presently available for data processing, and the seemingly endless number of new machines being introduced, makes evaluation and selection an extremely difficult task, even for those who have considerable

experience at it. Frequently, the best results are obtained by combining in one system equipment made by several different manufacturers. Obviously then, the choice can not be left up to the equipment salesman, although such services as are offered by the equipment manufacturer for appraising a company's needs should be utilized.

When it comes to the design of a new system and the programming of equipment, again the consultant plays an important role. He will explore the many possible alternative procedures and make certain of the impossibility of doing a job on a certain piece of equipment before turning to a more expensive machine. Also his training and experience have taught him the importance of forms design for a data processing system. Thus, this important segment of the design work is not done in a manner which might later lead to hidden inefficiencies throughout the system. Even with proper equipment and forms design, effective programming is necessary if the savings anticipated in the new system are to be achieved. It is not unusual to find expensive machinery idle and excessive clerical costs resulting from inadequate programming of an otherwise well conceived system.

An interesting by-product not often mentioned in conjunction with employing consultants is the further education and training of employees that takes place as a result of the association with experienced consultants during the development of a systems program. Many of our clients have told us that such intangible benefits, in the long run, were worth even more to their companies than the more tangible benefits which were the main reason for the system.

Finally, many consulting firms tend to specialize in particular areas of business management or in a particular industry. It would be difficult, if not impossible, for a company to find personnel with comparable experience who would be willing to work for the relatively short period of time required to solve those problems that fall within the areas in which the consultants specialize.

A Comparison

In summary, the place of a consulting firm can be likened to that of a physician. You don't keep a doctor around your home at all times. When you are ailing, you go to him and he prescribes a remedy. Sometimes, if your ailment is not of a general nature, you seek a specialist. But in any event, when you are cured you no longer retain the physician's services. If you should be so unfortunate as to become ill at a future date, you call upon him again, or, if the circumstances dictate, you call upon another specialist.



Data Processing FORUM

QUESTION-What Do You Consider the Place of Service Organizations in Data Processing?



John D. Dale,
President,
The George Elliott Co., Inc.,
Management Engineering
Consultants,
New York, N. Y.

THE COST OF MODERN DATA PROCESSING EQUIPMENT and the far-reaching effects of its installation upon an organization require that decisions with respect to its purchase and applications be made only after very thorough analysis. The typical company lacks an adequate pool of qualified engineering talent with time available to do this. A consulting organization staffed with management engineers qualified in data processing and systems and procedures can make this study on a "when needed" basis.

Analysis of the feasibility of a computer installation should begin with setting the objectives of such an investment. These should be based on both present and future needs. Existing systems and procedures should then be reviewed to determine the extent to which these objectives might be realized with existing equipment. Increasing efficiency in the use of present equipment may achieve many of these. Not all companies are at the proper stage of growth and size for computer equipment.

An outside organization can objectively review the client's entire system of management reporting and control to determine what additional benefits a computer installation can make in these areas, as well as estimate savings.

When a computer installation is recommended, the consultant works with the client and representatives of manufacturers in determining the system best suited to current and future needs.

The proper number of operating personnel for the computer installation must be selected and trained. Here again, an outside organization can provide valuable assistance.

Installation of computers requires a totally new

system of procedures. Skill, experience, and undivided attention are needed. A consulting firm supplies these requirements when, and only for as long as, they are needed.

Selecting applications for the computer system represents a challenge to imagination and analysis. It is an effective and broad management tool that should be used to its fullest advantage. Schedules for applications must be prepared not only for routine accounting operations but also for other important uses. These include areas such as inventory control, distribution analysis, etc. Consultants assist management in planning for smooth conversion to computers and insuring their fullest utilization.



Arthur R. Rhody,
Vice President, Operations,
Paul B. Mulligan & Co., Inc.,
Management Consultants,
New York, N. Y.

COSTLY ERRORS can often be avoided by employing a reputable service organization specializing in office improvement programs. Such service organizations furnish valuable know-how, standards and technical assistance which can be used advantageously. Feasibility studies, for example, require the application of accurate standards to evaluate costs on present and proposed systems. Much of the analysis required in a feasibility study will be duplicated in any subsequent programming phase of an installation. Consequently, the time for programming will be substantially reduced. Reliable predetermined standards, together with the technique for applying them, can be furnished by service organizations specializing in this work.

In a recent questionnaire sent to our client companies, all answered in the affirmative when asked if

standards are used to evaluate proposed methods changes. These clients represent a wide cross-section of industry and commerce throughout the United States and Canada. Service organizations continuously render assistance that is not otherwise available. They draw from broad experience gained in observing numerous installations and have earned a worthwhile place in our economy.



A. T. Frey,
Vice President,
McClure, Hadden
& Ortman, Inc.,
Management Engineers,
Chicago, Ill.

TOP MANAGEMENTS of both large and small businesses, when they are introduced to the subject of data processing equipment, generally associate their application to accounting, timekeeping, payroll compilation and distribution, and inventory control. Up until the last several years, when the situation has warranted the purchase of such costly equipment, we have been instrumental in influencing our clients to invest in the equipment to perform only the above functions. On one occasion when we had made our initial recommendation that a client install punched card data processing equipment, we had not considered extending its use to fields other than those referred to above. However, it was not long after the installation had been made when we discovered we could use this equipment to assist in the client's job evaluation program. The only additional expense was for the printing of special job evaluation of data processing equipment; the job evaluation project was shortened approximately 25% plus the extended coverage of the costly equipment. ■

Data Processing QUIZ

WE HAVE SELECTED SOME QUIZ QUESTIONS from civil service tests and from manufacturers and college courses that you might be interested in trying out on your staff. Tests, of course, are only one means of measuring competence. An operator or analyst who works hard and contributes to the har-

mony of an organization may not do so well on a data processing quiz but might nevertheless be of greater value to an organization than someone who is more technically competent but doesn't pull in the right direction.

We are considering making this "rate your staff" feature a regular column if sufficient interest is shown in it. Let us know if you feel it warrants continuation. Should it be more technical, more difficult, multiple choice, etc.? (Compare your answers with those listed below.)

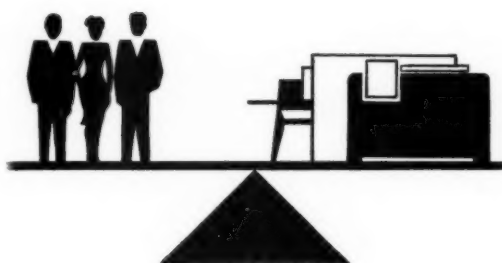
TEN QUESTIONS

1. What are some advantages of block sorting?
2. What are some methods of checking key punch accuracy?
3. To sort a deck of cards into date sequence, which card column is sorted on first if month, day and year are punched in columns 20-25?
4. How many punched cards can be stored in a twenty-two drawer file?
5. About how long does it take to reproduce 25,000 cards?
6. What type computer has a large memory and is designed to store data related to all of a company's products and customers so it can up-date all pertinent records affected by a transaction as it occurs?
7. What is the storage device in a computer called that temporarily holds input or output data while waiting for one of the computer components to catch up?
8. What two digits are used in the binary system of arithmetic?
9. What five components do all computers have?
10. There are two types of computers. One kind handles precise numbers and is used in business and science. The other performs physical measurements and is rarely used in business. Name them.

▽ ▽ ▽

ANSWERS

1. Next step can be started sooner.
A more convenient size deck can be used.
2. Key verify.
Check to previously established control totals.
Visually read back printed data to source document.
Column 23 because the minor sort is day.
3. Approximately 75,000.
5. About five hours, allowing 10 or 15% non-running time.
6. Random Access.
7. Buffer.
8. One and zero.
9. Input, output, memory, arithmetic unit, control.
10. Digital and analog.



Criteria to Evaluate Data Processing

Here is a list of 18 factors that are important to management regarding punched card or electronic data processing

ONE OF THE FALSE HOPES that has been so often presented to management is the equation of machine time with clerical effort. Rarely have enough clerks been displaced to cover even the low estimates much less the real costs. Of more interest to management is the idea of not necessarily reducing the work force but making its expansion unnecessary as volume increases. We all have seen figures which indicate that 8 out of 10 companies expect sales volume to increase 28% by 1965 and 100% by 1970, so top management must be made to feel confident that you with your equipment can absorb these new volumes. Some managements have the feeling that computers so far may be too good at the old army game of "hurry up and wait." The question is not "Can the machine deliver the desired facts at great speeds?" but rather, "Can management take action at relatively comparable speed on the results of these quick reports?"

Most are finding that it is getting to be an accepted fact that it's easier to teach the machine to someone who knows something about the business, as opposed to hiring the mathematician and then teaching him how the business operates. Management would prefer it this way but it has to be worked out.

Management is always concerned with the problems of human relations since executives may owe their position to a system that they were responsible for introducing. If you throw out a man's system, what happens to his job? You can hardly expect him to cooperate wholeheartedly in abolishing it.

In the future it looks like we will have fewer people doing what machines can do and more people doing the things that only people can do.

I have made no effort to put the following factors in any particular sequence since I am sure it would be much too controversial a matter to attempt to do so.

1. Morale

Certainly top management must be confident that the new venture is not going to destroy or greatly disturb the morale that it took long years to build. An item of first importance is to sell the idea that the machine is not going to take over, but it is going to release people from routine tasks and make them available for higher level work with correspondingly higher salary and responsibilities and value to the company. The problem that confronts most companies is to find qualified people and not what to do with the people that might be displaced with the introduction of a new system.

2. Communication

Communication in this sense means that the manager of data processing equipment must keep top management informed; he must try to get top

By R. H. Johnson



management sufficiently interested in learning something about these powerful machines and make them realize that they have to help in developing the questions that we would like the machine to answer. Understanding and cooperation on the part of top management can only come if they are kept fully informed and interested, and all of this information must flow down the line through middle management and into staff jobs. Management wants something with which to cope with the ever increasingly complicated engineering, logistics and marketing problems and perhaps you have the answer for them.

3. Dollar Savings

This is a very difficult area. All experienced people have had the disappointment of failing to create true dollar savings from the point of view of the comptroller. You properly take pride in the fact that the system has done so much for the company that the dollar saving is there, if you look hard enough for it. It is apparent to all that many things are being done with the equipment that could not possibly have been done without it. Measurements of past and present performances are always helpful in proving this point.

4. Ability to Absorb More Work

Management is quite willing to think of this equipment having the ability to absorb more work as opposed to displacing people from their jobs. By referring management to the projected increases in sales volume most companies expect, you can graphically show prospects for sizable future savings and increased profits.

5. Proper Safety Factors for the Records Being Recorded

Management is still far from convinced that this whole idea of recording their very important records in the new manner is a safe and sound procedure. After all, it is possible that through someone's error, these records can be wiped out and unless the safeguards that are available are explained, there will continue to be an uneasiness in this area. There are many safety factors built into the systems. It is of great importance that the time be taken to convince management that their fears are unfounded in a well organized punched card or electronic data processing system.

6. Improved Timing of Management Reports

Certainly one of the prime reasons that management becomes interested in this equipment is the hope that they're going to get timely reports of conditions that affect their business. This perhaps is the most direct method of convincing management of what the machinery is doing for them and they may be quick to sense the tremendous ad-

vantages that can be gained through the speeding up of management reports.

7. Deadly Accuracy

It has been said (*although it is most difficult to believe*) that of all the computers in the field today no error has ever been reported of a mathematical computation that has not been first caught by the machine itself. This is extremely comforting to management, but they are taking it with a grain of salt until it is proven to them. Good records and proper controls are taken for granted in today's record processing work so let's assume they come under the heading of accuracy.

8. Ability to Produce More Per Person

As volume of business increases, it must be shown that if this new equipment were not available additional personnel would have to be hired. Let's remember that management has invested a very sizeable amount of money for this equipment and is entitled to see some actual results. It is significant that the ratio of corporate profits to the gross national product has remained fairly constant over the past several years. Going back to 1949 and averaging this ratio, we find that there is an average ratio of 5.3 of corporate profit to gross national product. Gross national product has gone from 257 billion to 440 billion at the end of 1957. Corporate profits have gone from 15 billion to 19 billion. It is apparent, therefore, that unless we can improve the production per person it is going to be increasingly difficult to maintain this ratio. It can be said then that one of the items of high interest to management is the ability to produce more per person and surely we can agree that electronic equipment can be a giant step in this direction.

9. Ability to Retain the Personal Touch in the Operation

This item possibly applies more to banks and insurance companies than to industrial businesses, but let us assume that it applies equally to all. If we so automate our operations that all of the personal touch is lost we create the feeling right through to the customer that our company is one big machine. People don't like to deal with machines, they like to deal with other people and that feeling must be retained. Machines are great, but the customers couldn't care less how their reports or statements are prepared.

10. Ability to Solve the "Little Rush Problem"

One of the aggravations to management is for them to buy or rent high powered machinery only to discover that some little job that used to be done manually in a few minutes must wait its turn in the schedule for the big machine to do it. We had an example in our bank not long ago where

one of our men wanted what we call an investment analysis of a rather small account. He wanted it in a hurry and asked when he could expect to get it. He was told that the machine schedule provided that that account would be run in about two weeks and he could expect his result in about two days after the two week waiting period. This account could have been worked up manually in less than one hour. Since the man who asked for this report really needed it in a rush, he should have been told that he would get it within the hour rather than exasperating him by suggesting that he must wait more than two weeks because of the system. Judgment is still a valuable factor and the "little rush" must be taken care of.

11. Retaining the Feeling of Giving Service "No Matter What"

Regardless of how excellent the machinery might be or how high-titled the manager of the equipment is, it must be remembered that the equipment was obtained to give service to the organization, not to glorify those who are directing its use. The machinery does not produce a product; all it has to offer is service.

12. Retaining Judgment as to Whether a Particular Job Should Be Automated or Not

The high cost of this equipment caused many department managers to put work on it that could have been done better by other means. But rather than show a picture of idle machine time, they chose to put every possible operation on the equipment. Most of us are mature enough now in the managing of such equipment to know that this is poor practice and should make every effort to avoid this mistake.

13. Reduction in Training Costs

This does not refer to the training of programmers or electronic managers but rather to clerical training for present complicated computation which is done manually. Management would be interested in knowing that most complicated computations which are required in daily operations of many businesses can now be processed so that it will no longer be necessary to think in terms of having to back up the senior man on this manual job with an understudy and consistently be sure that the understudy is fully capable of handling this manual operation. So once we have automated the computation no further clerical training is necessary.

14. Relief for the Problem of "Numbers of People"

Larger numbers of people mean higher payrolls, pensions and other benefits, but often overlooked is the fact that it also means a need for more

space. This is a very substantial item, particularly in the big cities. First class space in New York City costs about \$6 a square foot and it takes about 125 square feet to properly house a person. You must consider that aisles, wash rooms, coat closets, conference areas, etc., have to be included when you are realistic about space requirements per person. At \$6 per square foot and using 125 feet as a requirement, this amounts to \$750 a year per person. If 10 people are added to the staff this amounts to \$7,500 a year for space. Your data processing equipment should be able to absorb an ever increasing volume of work without a corresponding increase in the number of people. Management would like to be assured that the equipment has the ability to handle this problem. Don't confuse this with the thoughts concerning displacing people, however.

15. The Truth

Management must be told the truth about what they should expect this equipment to do for them and, as accurately as possible, the costs. We are all inclined to talk down the costs or forget the many fringe extras and to oversell the benefits that the company will realize.

16. Ability to Meet Competition

More and more competition between firms centers about the ability and the capacity to innovate. For this reason management needs new techniques for scanning and analyzing business information. While there are some companies just trying to "keep up with the Jones" there is nevertheless a real need of this equipment in many businesses to survive and to meet their competition. Timely reports and fast, accurate analysis of conditions are of great importance when competition gets tough.

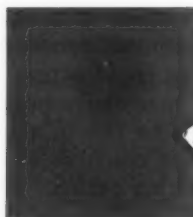
17. Hope of Getting Set for 10 Years or More

Most managements would like to feel that with all the heartaches of a new installation they will be in a good position for at least 10 years and will not have to go through another upheaval soon again. This is a very reasonable feeling on the part of management. We should strive to give them the assurance they seek.

18. Ability to Get the Equipment into Immediate Action

Most managements would like to feel that the advanced planning, thorough training and complete testing of all programs have been completed before the equipment arrives. When the equipment does arrive, you should be ready for it and in the shortest possible time have it *working* so that the company may start enjoying the benefits as soon as possible. ■

Analytical Remarks



An analysis for analysts that analyzes analyses!

THE TERM OF ANALYST could mean most anything. These days we have market analysts, soil analysts, budget analysts, news analysts and a host of people busy analyzing everything from the mating habits of termites to the reason why the swallows return to Capistrano. Maybe it would be well for a few minutes to analyze analysts.

Back When

Back in the good old days life and people were simple. Only three things happened in a normal life time—a person was born, got married, and there was nothing left to do but die. He had no control over the former or the latter so he only worried about his marriage. His work was like-

wise simple. To him horse power meant one horse, in person. He was happy without TV, outdoor movies, electric can openers and tail fins on his buggy. The only items withheld from his pay check were the two dimes he kept from his wife so he could live it up with the boys in the grog shop Saturday night. He was happy with a semi-annual bath and did not have to choose between gooey creams, messy sprays or the rolled-on variety to hide his gamey smell. Time was an element that he measured in twelve hour work days, six day weeks and a vacation he took beginning the first day of his own wake. In all he hoped to live out the three score ten allotted him by the Bible.

In Commerce

In business the problems were likewise simple. Businessmen bought at a price after some sharp trading and sold at a profit after some more bargaining, and do you know some of these poor souls like John D. Rockefeller, Jay Gould and Willie K. Vanderbilt went through their entire lives never knowing if they had made 69 or 70 million dollars? What was worse, the government didn't either and they let all that tax money go down the drain into such foolish things as the Ford Foundation and the restoration of Williamsburg, Virginia. Just think how much better Washington could have spent it on such fine foreign aid programs as restocking the Dead Sea with fish or sending electric razors to Castro's boys in Cuba. It became evident to the politicians that some way had to be devised to get hold of some of the loot so they hired a fellow to analyze the problem and suggest a way it could be done painlessly. Thus a profession was born.

In the Beginning

A certain fellow up in Endicott, New York had invented a time clock that could be installed in a factory to make sure that all the help arrived on

By S. J. McLagan



time and didn't sneak off before quitting time. In order to sell the contraption he had to sell the idea that the time saved by making sure of a full day's work would add up to several man hours each week in each factory. To figure out the saving for the industrialist this fellow invented an adding machine. This meant they had to hire a fellow to run the adding machine and he succeeded in using up the time saved by the time clock. This situation created sort of a stalemate until it was decided to have some one analyze that problem.

The analyst wasn't about to analyze himself out of a job so he injected some more complications, like paying by check instead of cash, taking inventory instead of buying what they needed and selling what they had on the shelves. This called for more machines that in turn required more analysis and so the felony compounded. It has taken more and more men to figure out how to save more and more time until now our 40 hour week is considered drudgery. Our withholdings are now handled by the State and Federal governments and we are lucky to have the two dimes — even if two dimes won't buy one beer.

I suppose, though, we should be happy. Look at all the fine things we enjoy these days. We have cars that will do 90 in second gear, and radar to give us speeding tickets if we do. We have TV in every room so we can't possibly miss the 25-year-old movies that we didn't have time to see in 1934. In fact, we have saved so much time in the last decade that we don't quite know what to do with it. For instance, you can't even use it up in travel because right now you can go to San Francisco via the new jet service and get there before you leave New York.

The next thing we must analyze is what to do with all the time we've saved.

The Savings

I figured the other day with the help of a full set of transistors, punched cards, vacuum tubes and assorted gadgets and a pile of fanfolds high as the "Think" sign on the wall, that right here in New Jersey we save 3 eons, 43 light years, 14 eras and 2 weeks every year, a megasecond at a time. My analysis further calculates that with that much time saved each year there is no reason to have the next 2,562,000 babies because there isn't anything for them to do when they get here. You all know that the machines have saved so much time that 4 million are out of work and the figure would be 5 million except that it takes one million government employees to analyze the problem and handle the payments and collect the taxes necessary to cover the tab.

Maybe you think that we have reached the ultimate in analytical work and computation. Indeed

not. We haven't really started. Let me give you an example. Every available computer and dozens of analysts struggled together over the past two years and we finally got a moon shot off the pad at Cape Canaveral — and it was a success — only missed by 44,000 miles. Now the same crew of machines and men will spend the next two years trying to figure how it happened to come so close. I'll bet too that when the figures are all in and analyzed that the error was made by a punched card operator who hit the wrong key as she remembered how her boyfriend had snapped her girdle the night before.

We do have some help in using up the saved time. The C. I. O. has made a pretty good dent in it with strikes. Congressional committees have chewed up some more in the hearings and, of course, we have the coffee break.

All of this may be progress, and perhaps we do need a few tons of figures from our machines to keep the analyzers busy figuring the odds on "Plow-boy" in the 5th at Tropical Park or the chances of "Ike" making a hole-in-one — but sometimes I long for the good old days when the only analysis one faced each year was the sample mother took down to the family doctor each spring to return with always the same answer, "sulphur and molasses."

■ ■ ■



Holders clipped to tote boxes on conveyor belt Tabulating card holders in shelves on storage walls Card holders stacked 2-high on shelves

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B. E. WYNNE, Controller, Western Maryland Railway Co.

CONTROL AT WESTERN MARYLAND

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6 hours sooner"**

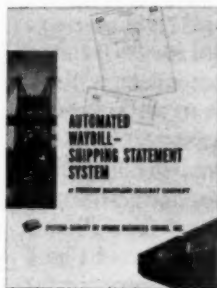
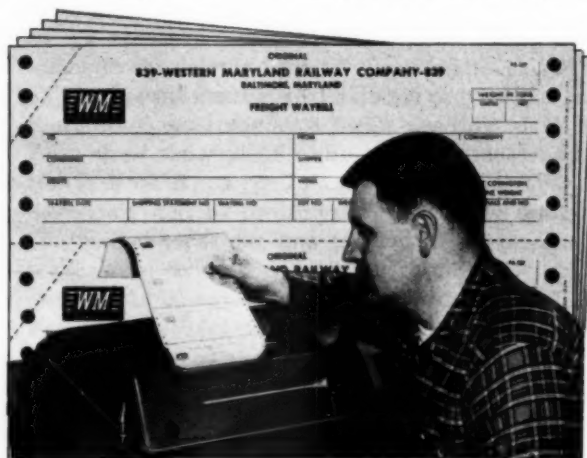
A new automated system at Western Maryland Railway's Port Covington ore terminal speeds paperwork, cuts copying errors, and reduces five forms to two. In the past, handwritten records of each car's tonnage were carried half a mile to the agent's office, totalled and recopied, and carried more than another mile to the yard office before the train could depart.

Now, as the cars are loaded, the weighman records the tonnage on a teletype unit in the loading crane. This simultaneously generates, in the yard office, punched tapes containing variable information about the cars. Combined with constant data tapes, this tape is used to print the Waybill. A complete set of Waybills is handed the conductor minutes after the last car is loaded and coupled in place. At its destination, each car is delivered with the consignee's copies of the Waybill, his 'pre-written receiving memos'.

A by-product tape picks up all data from every Waybill, and is used to prepare the Shipping Statement. This combines on a single form Shipping Notice, Weight Certificate, Freight Bill and Blanket Waybill. Derived from the original tapes, it is certain to be accurate.

"The help of the Moore man and his facilities were valuable in working out the forms we needed," said B. E. Wynne, Controller for Western Maryland and

designer of the system. The forms are a 5-part Moore Speediflo Waybill and a 2-part Moore Speediflo Statement. They are Western Maryland's control in print.



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The Forms Specialist's Place in Data Processing

Forms efficiency in punched card data processing is no accident. It is the result of continuous education and awareness.

DATA PROCESSING SYSTEMS have presented a genuine challenge to the forms specialist. He must either face up to it and acquire the additional necessary knowledge to design data processing forms or he must admit that it is beyond his ken and concentrate solely on flat-cut forms. There is no middle ground. He must decide whether he wishes to be a full-blown forms expert or a mere designer of simple forms. Frankly, it is our belief that this may well separate the men from the boys. We sincerely hope the majority of forms men will try to achieve the high level of development necessary to data processing form design and will not be either too self-satisfied or fearful of the unknown to try to improve their lot. For that is exactly what it amounts to. The more skill and knowledge a forms man has, the more money he is worth to his employer.

Knowledge a Basic Requirement

Gibbs Myers, well known authority on forms design and control, had this to say recently: *"Forms in the IDP and EDP systems . . . are much more complex and can be designed only by someone who is on familiar terms with the requirements . . . and limitations of the type of equipment being utilized."*

Mr. Myers has his PhD. from Yale and certainly knows his topic. His words are plain enough, however, to be understood by anyone. His statement is a truism. No one can fake knowledge of such complicated equipment as is used in data processing. But, and here is the point, he can *acquire* it, by applying himself. There are numerous publications and books available on the capabilities of these awesome machines. The manufacturers themselves will supply you with detailed specifications for

forms design. Many large printing companies spend a considerable sum of money researching the potential of various kinds of data processing equipment.

Besides this, their salesmen are exposed to many useful applications during their visits to clients. Their background and training, plus this exposure, make them an invaluable source of help to the forms man.

Thus, the fountain of information is gushing forth. All that is needed is for the forms specialist to fill his cup with the knowledge it contains. His past experience in forms design, printing processes and paper, gives him a tremendous head start on someone such as a systems man, or even a forms

By Ray Marien



buyer, who is usually unaware of the intricacies of the graphic arts.

Trade organizations have established committees in many instances for the express purpose of setting standards for forms design. Such a case in point is the American Banker's Association. Their concerted effort in the field of magnetic check imprinting has produced a standard type face, E-13-B, for this purpose. It has only 14 characters in the complete font but they are expected to revolutionize check handling in banks all over the country. Eventually, a large percentage, if not all, of bank checks will have pre-printing on them in the E-13-B font which will indicate the account number, branch bank and main office bank. The sorting of these checks by electronic means will then be greatly speeded up. And rapid automation becomes mandatory when we consider that within ten years there will be about 20 billion checks being processed annually. The ABA, working on this for five years, has produced a booklet with minutely detailed specifications for magnetic ink check imprinting. The booklet is available for a small charge through their member banks.

New Developments

The printing process best suited to magnetic ink printing at the present time is letterpress. Lithographic inks are still being perfected and it is only a matter of time before that process, too, lends itself to this new type of ink. An important fact to remember is this: the so-called "magnetic inks" are not really magnetic. They are printing inks which contain tiny particles of ferro-magnetic pigments and are capable of becoming magnetized. They become a temporary electromagnet long enough to produce a signal in the check processing equipment. They have to be remagnetized before each use to restore the full strength of their magnetic field.

High speed printers, in the news every day, require careful attention to the papers and carbons in the forms used. The forms manufacturers working closely with large paper mills have done much to keep up with the specialized papers required by this high speed equipment. Some of these machines can print at speeds up to 1,000 lines per minute from a spinning drum. Such factors as humidity and its effect on paper shrinkage or stretching, the strength and weight of the paper, and the ease of forms-feeding through the machine have to be carefully considered well in advance of ordering. It's much too late to discover inadequacies after your million-dollar rental equipment is in and you are paying for it.

There is a high speed electronic printer on the market that prints *five* times as fast as the one just mentioned. It can do 5,000 lines per minute! It cannot print multi-part sets, however, since it uses

the so-called "impressionless" type printing. This is a combination of an electronic tube and the Xerox process with the resultant electrostatic transfer of the image from drum to paper, then heat "fused" for permanency.

Punched Card Forms

Aside from the more glamorous electronic equipment, the forms specialist has still to contend with the more prosaic methods of data processing, such as punched card equipment, card-punching and tape-fed teletypewriters. These are complicated enough but they have the virtue of being tried and proven over a number of years and reams of specifications have been written to cover their forms requirements. It is up to the forms man not only to digest all this but to keep alert to new developments in the printing field for this established equipment.

For instance, continuous punched cards without medial strips, or piggy-back construction, are now available. Bursting equipment has been introduced to handle those continuous punched cards which do have medial strips.

The continuous punched card has long been sought in the data processing field. Now it is an actuality and the forms man should take advantage of it. The last drawback, the fact that the grain runs the "short" way, apparently has been bypassed, judging from industry's acceptance of this type of card. The price and printing features available make them worthy of interest to everyone in the field.

New printing papers have been introduced which eliminate the need for carbon interleaving. This is especially valuable where the disposal of carbon paper becomes a problem. Special coatings on the face or back of the paper, or a combination of both, have obviated the necessity for carbonized tissue inserts. One version is a simple application of carbon coating on the back of each form except the last. This last is then coated with a protective layer of wax or plastic to keep it relatively smudge-free.

A trial run of dummy forms provided by your printer is an absolute essential in data processing equipment runs. All too often "confetti" resulting from unclean perforating, or lack of register between the perfs on your carbons and your forms sets, can jam up the equipment. Quality of product is very important in these cases. The printer who sells on price alone should be scrutinized very closely. His forms should be dry-run to everyone's satisfaction. Often, a few dollars saved in the purchase of forms can cause a shutdown of equipment that runs into real money! It's better to be sure of the quality than jubilant over saving a few dollars from an untried source.

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PROCESSING

arises — and your punched card equipment seems incapable of it — you have two solutions. First, you test the new super-calendared paper that comes in 11-pound weight (but bulks up at even less), coupled with the strong, lightweight carbon for which it has a special affinity.

If this doesn't help (and it should, under the proper circumstances, provide you with 16 or more copies) you then go to a continuous master. This may be the offset or hectograph type. Neither are inexpensive but both will give you all the copies required. The use of either one, however, entails the purchase of subsidiary duplicating equipment and run-off paper, plus an operator's services.

Fundamental Elements

To get down to the basics, a good forms man starts with technical knowledge that should be sec-

ACCESSORY EQUIPMENT in this article refers to punched card files, wiring tables and storage cabinets, racks for sorters and collators, mobile carts for transporting cards and forms, bursters, carbon releavers and decollators. Storage and handling facilities for magnetic and punched paper tape are also included.

To many new punched card, punched tape or computer installations, the need for properly planned accessory equipment is apparent at the outset. Sometimes, however, it goes completely unconsidered until the last minute. The systems planning and the technical problems tend to push these requirements into the background. Finally, after the procedures are debugged and the equipment is installed and put into regular working routine, an awareness of the needs of well designed storage and handling equipment seeps into the minds of management.

In the meantime, the need for adequate facilities is satisfied by conventional office furniture, not specifically designed for the purpose but used because it's available. In most installations of this nature the layout of floor space is not given consideration. Accessory equipment suppliers are trained to assist in space layout and some will provide three dimensional models or pressure sensitive flat models and a floor layout chart so that you can try variations before the equipment arrives. If only someone would make models of living room furniture available for wives, data processing managers would be able to avoid the furniture-shifting backaches which follow the decision every few weeks to "try the TV over here and the couch over there."

Department efficiency suffers from poor work place facilities and poor planning of space. Planning and providing for this auxiliary equipment

and nature to him by this time. This includes such stock questions as: "Does the form fit the increments of standard size printing cylinders of rotary-type printing presses, or does it mean wasteful, inefficient use of that equipment?" or "Have you considered that colored stripes on punched cards save you money not only in the initial purchase, but in their scrap value?", and so on.

The progressive forms specialist will be ready when his company confronts him with the problem of designing forms for its data processing equipment. He'll have the initiative and the knowledge plus the willingness to venture into unknown fields that will make him an asset to his company. He'll be looking forward into their future as well as his own.

■ ■ ■

ACCESSORY EQUIPMENT PLANNING

Think ahead to save time and money

should be simultaneous with the planning of the installation. If this has not been done, then there is no better time than right now to arrange for

By James W. O'Connor



storage and work facilities that will get those cards, tapes and forms that are cluttering up the place out of the way.

Space and location are definite influences on the effectiveness of automated equipment. It is incongruous to have rented several thousand dollars worth of equipment to speed up data processing and ease the manual burden on personnel and then have the operators struggle to move thousands of punched cards, forms, control panels and tapes from the supply room to the machine or group of machines to process the data. The obvious consequence is less running time and more handling time. Another result is operator frustration.

In the data processing department, the planning for this area can minimize "housekeeping chores." Unless data can be physically moved to and from the processing area in the most efficient manner, the overall total processing time may become excessive.

In laying out space the department or organization and the work flow should be considered. For example, if the operation is a large assembly line type job for which the operators are assigned to machines rather than to procedures, then instead of grouping a mixture of machines and fixed work tables, the emphasis should be on groupings of similar machines and on mobile temporary storage

and handling units. This can be overdone. We don't know how true it is but rumor has it that in pre-war days, the Social Security punched card department had sorters with the reading heads soldered to a particular card column so that one batch of operators did nothing but sort on column 24, the next batch sorted on column 23, etc. My, what interesting work!

We've seen some experts decollate carbon from multiple-part forms without getting their hands dirty and without seriously wrinkling or smudging the forms. We've seen some expert forms bursters separate continuous forms and strip the margins off. We've also watched some devices in operation which decollate, burst, strip and imprint that sound like threshing machines and act like shredding machines. Before selecting one of these devices investigate the field thoroughly. When you design a multiple-part continuous marginally punched form consider how you intend to handle it after it is printed. Too often a poorly selected burster sits in the corner with the dust collecting on it while the job is performed by hand by an "expert."

The data processing room can be the management showplace or it can be a mess. In the case of computers, the site preparation may cost hundreds of thousands of dollars for raised floors, air conditioning, electrical conduits and the like. Thirty to one-hundred dollars a foot is typical. Investigate this cost and include it in a feasibility presentation. The department may be located within reach of the executive offices or relegated to the basement. Whether you are striving for appearance or for efficiency, adequate storage facilities are a must. Cards not protected against humidity and not kept under compression are going to cause jams in feeding. Magnetic tapes left unprotected from dust and not safely and conveniently stored and labeled may cost hours, even days of expensive machine time. Paper tapes, marginally punched forms and punched cards which must be manually referred to or selected and manually refiled may double processing time if not systematically filed.

Manual search time in a tub file operation can be minimized by proper guiding and tabbing. Re-file time can be minimized by an effective "out" indicator. Many clever methods for accomplishing maximum file efficiency are available depending upon the problem. In many cases, a ledger card combined with a punched card or tape can be designed so that the ledger card reference also accomplishes the card or tape selection.

Even if it's not appearance you're interested in, you will surely agree that orderliness is essential. We are reminded of the "place for everything and everything in its place" advice that a mother gave to her newly married daughter who was harried by housework. "If you can't keep the place clean, at least keep it neat." ■



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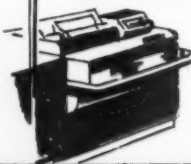
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Frustrations of a "Forms Salesman"

"We know our business—yet our attempt to give away expert consulting advice is rejected." After reading this article will you agree?



IT HAS BEEN THE WRITER'S EXPERIENCE, from twenty-five years of selling business forms, that any successful forms salesman can point with pride to his outstanding accomplishment in the important function of cutting work, clerical and forms costs for his customers.

How many administrators are really aware of some of the contributions we forms salesmen can make toward solving a company's paperwork problems? Most organizations take full advantage of the experience and training that we are happy to supply regarding ideas for systems improvement and economical purchasing practices. Sometimes we meet with the opposite attitude.

It is discouraging when calling on a buyer of forms to get the impression that he is complacent, indifferent, disloyal, mentally lazy, knows very little about printing and he cares less. Some buyers feel that if they send out three or more bids, a very expensive practice incidentally, and select the lowest price, they did a fine job. Buyers who follow this practice every time they have a form to purchase can do more harm than good by convincing forms salesmen that they shouldn't call any more.

Another impression we sometimes get from calling on a forms buyer is that he is an impatient, uninterested listener. He often seems more concerned with getting rid of the salesman and his usual shake-off line is, "We have satisfactory vendors who have been selling us for years and a long list of new suppliers ahead of you." What a rejection of free consultation! What a pity since the salesman may be offering thousands of dollars in savings. A great mistake can be made in blaming the buyer when in reality he has been molded this way by management and it is the real source of the blame.

Path of Least Resistance

Too frequently the buying of forms is not viewed

by management in its true perspective. It is often looked upon as a nuisance and one of the least important functions of a business. Purchasing of forms appears to be the step-child of the purchasing department.

We have seen cases where the forms buyer has not been trained for his job, nor is he given the opportunity to develop the necessary qualifications. He does not have the background in forms control and systems. He is *discouraged* rather than *encouraged* to follow through on changes in forms or systems.

Because he usually is discouraged from making suggestions as to the grade and size of paper, the

(continued on page 24)

By Herman Levine





Auditing Your Production Control System

An audit of production control systems is as necessary as accounting function audits.

A SMALL NEW ENGLAND MANUFACTURER recently decided that he would have to close his business. He could no longer afford to operate in hopes that business would improve. His manufacturing methods were good and his product was noted for its quality. He produced at a cost that returned a fine profit from a competitive selling price. The trouble was not with the product itself, or with his manufacturing methods, but with the market. This man manufactured Buggy Whips.

The same is frequently true of production control. Companies have installed elaborate systems, provided modern efficient equipment, staffed the production control department with a sufficient number of trained personnel and yet the desired results do not seem to come forward. The problem does not lie in the production control department. The systems used and the equipment employed to tool the system are good but, unfortunately, man-

agement has not taken the time to make *itself* a prominent part of production control.

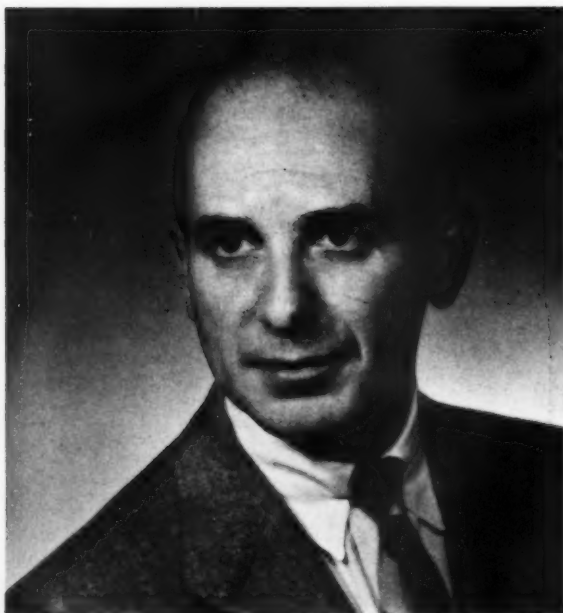
In making an audit of a production control system, it must be recognized that the establishment of effective production control implies a recognition of three basic premises.

First, production control is a management responsibility. This must be stressed to counter any theory which holds that controls affecting the use of manpower, machines and material can be delegated below the top executive level.

Second, production control is not a system. It is a philosophy or policy of management requiring the fullest participation of all departments. Lip service to this concept is not enough. No department can exist exclusively in its own rarified atmosphere and contribute at the same time to the smooth progression of manufacturing operations.

Lastly, production control is the sum total of intensive planning and the measure of performance against plan. Results must be consistently evaluated in the light of objectives to determine whether any of the factors involved need reappraisal. The work of planning and control requires a system to make them most effective.

By A. D. Radin



Auditing the Objectives of Production Control

Before appraising any production control system, it is necessary to establish the objectives of the production control department. These objectives are concerned with the manufacture of products at a satisfactory cost in time to meet customers' requested delivery dates. This requires planning the economical use of man hours, machine hours and units of material. This planning must be coordinated with delivery schedules to satisfy customers' needs.

The overall objectives of production control may be expressed as follows:

1. Planned inventories of raw material, parts and sub-assemblies, consistent with requirements, at the lowest possible dollar investment, based on sound economic principles.

2. Scheduled work loads to insure the greatest utilization of machines and manpower at the most economical manufacturing cost.

3. Good purchasing practices to insure delivery of purchased materials at the best cost in accordance with planned delivery schedules and cost estimates.

4. Control over daily shop activities to provide assurance that work is being performed in accordance with the established plans and schedules while providing flexibility to handle emergencies.

5. Service to customers and sales departments in the form of firm promises of shipment and current advice, when required, on the up-to-date status of orders in process.

6. Shipment of goods on time to meet promises to customers.

Auditing the Contributing Factors

Once management's policy on production control has been established, and the objectives of the production control operation have been agreed upon, it is then possible to start to audit the factors that contribute to the working of the production control department.

A careful review of bills of material and methods of operation sheets must be made. Bills of material should be examined with these thoughts in mind:

1. Does each assembly, sub-assembly or component part bear a numeric identification in the form of a part or assembly number?

2. Is each component correctly described?

3. Are descriptions uniform?

4. Are raw materials properly identified and specified?

5. Are bills of material kept up to date?

6. Is there a good fool-proof distribution method so that revised copies when issued are placed in file and the old copies destroyed?

7. Are the bills prepared in such a manner so that they are readily usable in the production control system or must they be re-typed?

Bills of material are one of the basic documents with which the production control department works. It is through the use of these listings that production control is able to determine requirements in terms of components and raw materials. The important functions of purchasing and inventory control are greatly affected by bills of material. The proper preparation of bills of material goes hand in glove with programs for parts standardization.

The preparation of these documents is not generally the responsibility of the production control department. It usually rests in engineering. Production control, however, cannot be expected to function in the most efficient manner without prop-

(continued on next page)

W. E. Thompson, Office Manager, Group Hospitalization, Inc., Washington, D. C., says



*"...and Baltimore's 4-Part
PASTED CONTINUOUS FORMS
help us to keep costs down.*

"In GHI, low operating costs are a must! . . . The lower our costs, the more we have left to help pay for the hospital care of our 790,000 subscribers," says Mr. Thompson . . . "Our 25 years of service to the Nation's Capital has taught us that the better we look after our pennies, the more dollars we can save . . . and the pennies we are saving on Baltimore Business Forms soon run into a lot of dollars.

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Group Hospitalization uses Baltimore's 4-part pasted continuous form with its low cost non-process carbons for billing group subscribers.

Baltimore Business Forms
(DIVISION OF BALTIMORE SALESBOOK CO.)
3128 Frederick Avenue, Baltimore 29, Md

erly designed and prepared bills of material. This is one of the major reasons that production control must receive top management blessing. Because, in this instance, engineering is as important a part of production control as the planning and scheduling function itself.

While bills of material are required for the establishment of component and raw material requirements, operational data in the form of methods sheets or operation sheets are required by production control to determine machine hour and manpower requirements. Here again, the basic document is not necessarily prepared by the production control department. The data should be organized in an efficient manner to serve the production control system. An audit of this information should be made to determine if the following facts are available.

1. Is there an operation sheet for each component, sub-assembly or assembly made in the plant?
2. Does the sheet properly identify the component by both number and description?
3. Does it list the raw material from which the part is made?
4. Does it describe each operation separately?
5. Is each operation identified as to the machine center and the department in which the work will be performed?
6. Does the operation have a standard number?
7. Are the time factors for the operation clearly shown? Are they broken down between operating time and set-up time?
8. Is the final delivery location for the completed component shown as the last operation?
9. Are the sheets prepared in such a manner so that they can be readily duplicated or introduced into the production control system without additional clerical work?
10. Are routines clearly established so that new or revised operation sheets are placed in file and superseded copies destroyed?

All of this data is required by the production control department to carry out the important function of scheduling work in the factory.

The system for receiving orders in the plant and preparing them for the production control department should be analyzed very carefully. Orders may take one of many forms. They may come directly from customers. They may be the result of a sales forecast that has been converted into a manufacturing authorization, or they may come from company owned warehouses to replenish depleted stocks. The originating source or the eventual delivery point for the products on order is unimportant. Orders should be screened carefully and "sight engineered" if necessary. They should be edited to make sure that the descriptive data in the body of the order is complete and correct. Credit checks, if required, should be made before the

orders are released to the production control department. The orders should be typed in usable form so that they may be readily introduced into the production control system without additional clerical effort.

Once these three basic documents have been declared in order, the production control department is ready to go.

Auditing the Functions of Production Control

Before auditing the production control system proper, it is necessary to review the functions performed by the production control department. These may vary in both name and number as not all companies, plants of the same company or even departments within the same plant go through identical steps to accomplish their objectives. The type of manufacturing, nature of the product, size of the operation and/or manufacturing methods will have a great bearing on the individual functions of the production control department. There are certain major functions, however, that are covered by most systems. These are best identified by what they *do* rather than by what they *are* since nomenclature in the field of production control is by no means standard even within identical patterns. A listing of these functions and a brief description of each is as follows:

ORDER SCHEDULING

The procedure by which each new order received in the plant is assigned a date upon which it will be completed or shipped.

DETERMINING REQUIREMENTS

The procedure by which orders are analyzed to ascertain the quantities of raw materials, parts and assemblies required for their manufacture. This determination is made in terms of "*how much and when.*" This function is commonly known as "*exploding bills of material.*"

INVENTORY CONTROL

As used here, the procedure for maintaining quantities of certain raw materials, parts and/or assemblies at a proper level of availability to service manufacturing orders.

PURCHASING

The procedure through which required items are bought from vendors for use in manufacturing. This process is frequently set up as a separate function, not directly responsible to the production control department.

This responsibility has no bearing on the work. Tight co-ordination between production control and purchasing is necessary to insure delivery of the proper materials in the proper quantity at required time.

MATERIAL HANDLING AND STORAGE

The procedure for correctly receiving, identifying, storing and issuing raw materials, parts and assemblies for use in the manufacturing process.

ROUGH MACHINE LOADING

The procedure by which the manufacturing time required to produce the orders placed on the plant is determined and scheduled by work center or similar grouping. This scheduling is done against the open capacity within each work area.

FACTORY PAPER PREPARATION

The procedure by which all documents (*input-output*) that act as instructions or means of communications between the manufacturing departments and the production control department are prepared and distributed.

DISPATCHING AND FINE MACHINE LOADING

The procedure by which specific orders are assigned to specific machines or work stations in accordance with the sequence of jobs and individual operations established by schedules. Results of work accomplished are reported to the production control department from this source.

SHOP EXPEDITING

The procedure through which exceptions to the established schedule or emergency jobs are followed up by personal contact between representatives of the production control department and factory supervisory personnel.

TOOL CONTROL

The procedure by which the correct tools required in the manufacturing process are made available in time to meet established manufacturing schedules.

SHIPPING

The procedure by which finished goods are shipped from the plant in accordance with the established schedules. This function, like purchasing, may not be the direct responsibility of the production control department, but co-ordination between shipping and production control is a *must* in any successful operation.

In making an audit of a production control system, these functions should be analyzed to determine their importance to the overall operation. As previously stated, each function may not be required. Those steps necessary to the successful operation of the plant should be determined and then the system for making these functions operative should be carefully analyzed.

Regardless of the system or the tools used, either automatic or manual, the procedure should provide

the means for both creating a plan and a method of recording performance against the plan. Any and all production control functions are concerned with both of these elements. Schedules only become effective when compared with actual performance. The procedure, therefore, is a two-way street.

Auditing Production Control Methods and Procedures

After the functions of the production control department have been clearly defined and analyzed, an audit should be made of the methods and procedures used to produce the control data required. The handling of this data is known as the production control system. The advent of electronics has provided management with one of the best means for gathering, calculating and reporting production control details. Automatic data processing provides for a new concept of production control administration, operation and record keeping. One reminder is always in order when describing the part played by electronics or any complex mechanical system. It is simply that *machines do not think*. Even the most accurate of machine-made reports must be supplemented by human judgment and initiative. Frequently, a combination of electronic or mechanical equipment and manually maintained ledgers provide the best tool for production control management use.

Speed, accuracy and cost are the three factors that must be given first consideration in selecting the proper type of methods, procedures and equipment. It may prove more economical, in some operations, to create records manually. Justification for the cost of equipment, space and personnel to operate an electronic or mechanical system for production control may detract from the advantages of speed and accuracy. For example, if a company utilizes electronic equipment for functions other than production control, there may not be available machine time on this equipment to produce the daily details required for control purposes. The cost of additional equipment could conceivably offset the advantages to be gained. It might prove more advantageous to perform a portion of the detailed clerical work on the existing equipment and do the balance manually.

The function of determining requirements is a good example of this approach. Here mechanical or electronic equipment could be used to explode bills of material, gather the detailed requirements for parts and assemblies and prepare a report listing this information. From this point, it might be best to check levels of inventory against a manually operated inventory record.

While it is true that electronic equipment provides a method of recording inventory data without need for prearrangement in numeric sequence, and mechanical equipment can provide inventory data

by performing several machine operations, well designed manually operated records can also furnish all needed information at minimum clerical costs and maximum speed. This is particularly true in those operations having five thousand (5,000) or less component parts.

Inventory control is a judgment activity. It is recognized that each item of inventory presents a problem in individual analysis unsuited to a blanket policy which attempts to cover all stock material. The job is further complicated by shifting procurement markets and changing requirements based on sales. Because of these continual changes, vast amounts of data must be kept available and current. This does not necessarily mean that manually recorded ledgers require a maximum of clerical effort. The most recent approach to this problem combines the techniques of ledgerless bookkeeping with electrically operated filing equipment. Details are collected, summarized periodically and posted to the ledger cards. Through the use of preprinted computing charts and signals, the inventory official can make excellent use of the management by exception principle. Quick reviews of the current status of any item in inventory is made by a sight check of the signalled position on the computing chart for the item. The information is constantly available and does not require a print-out or report from some other department before an analysis can be made. This type of operation, combining automatic and manual methods, will provide many companies with the type of immediate control necessary in the area of inventory management.

In making the audit, the type of paperwork and the flow of this paperwork must be analyzed step by step. We know that copies of two or three basic documents provide all of the information necessary to furnish input and output data. The methods used to prepare these documents may range anywhere from carbon paper to high speed printers. Decisions will be made and action taken on the facts provided by these documents. While the preparation of the documents is important, and care should be exercised to select the most economical methods for the use of any given company, it is more important to set up a system of checks and balances to make sure that each individual handling and acting on the input and output data fully understands its use and works in accordance with the established procedures and policies.

No one method is better than another. Each company must audit its requirements and then select the tool that is best for its use.

Concluding Observation

Production control is the management concept which, if properly fostered at the operating level, encourages all concerned to use it as a tool. It re-

quires human ingenuity for which there is no substitute. In detail:

1. There must be a management policy of production control. This policy must be firm and completely understood. Its concepts must be followed as lip service to the policy is not sufficient.

2. Production control is made up of a series of closely integrated functions. These functions must be defined and established before a system can be installed.

3. A system for production control should provide all necessary operating data, both input and output, speedily and economically prepared.

4. Control ledgers must be established so that a measurement of performance against plan, based on yesterday's production figures, can be continually maintained and analyzed.

5. The best designed system in the world will not operate unless those individuals concerned with the function understand the system, believe in it and adhere to its basic concepts. ■

Frustrations of a "Forms Salesman"

(continued from page 19)

design of the form, and to recognize flaws in the system, he becomes indifferent to these suggestions from the salesman. This attitude can be costly to the company.

He soon finds out it is better policy to let sleeping dogs lie, rather than make worthwhile suggestions. In other words, the forms buyer soon takes the attitude that management does a lot of talking about paperwork savings rather than encouraging, teaching, and giving the buyer authority to do something about it.

If the company is large enough to have a forms control or systems department, a better job is done in respect to cutting paperwork and a more intelligent job is accomplished on systems. However, this only applies to forms that they have had time to study.

The Usual Situation in Large Companies

Sometimes we find that the buyer and the systems group are at odds with each other. Normally this is not obvious to management and, of course, not admitted, but it is very apparent to any outsider who has worked with both.

It is the firm conviction of many that where a forms control or systems department in charge of forms is in existence, the buyer should be a part of this section. The buyer will undoubtedly become better qualified, if not by actual training, then by osmosis.

How can management expect to cut the costs of buying forms unless the buyer is given proper training, authority, and management's insistence that he seek the best outside qualified assistance to help in his paper problems? ■

Simplify the Program and Save

**Two simple ideas promise an appreciable savings
in the cost of programming for computers**

COMPUTER PROGRAMS for accounting information do not need to be as involved and time consuming, in both initial preparation and subsequent operation, as are many programs in current use or preparation. Much has been made of the fact that it takes many months to write and several more months to de-bug computer programs for accounting information. Very little, however, has been said regarding ways in which this time could be reduced, thereby freeing computer programmers to enable them to devote more time to new problems.

A major share of the unnecessary programming time is due to insistence (*usually on the part of management*) that the entire accounting system in question be placed on the computer — without regard to whether the machine can economically handle the entire system. This comes about as a result of the feeling that either the computer should handle the entire system or it isn't doing the job for which it was installed.

The other portion of waste, or unnecessary time, is a result of computer programmers and accountants reviewing the system under study, as it has evolved as a manual operation, rather than looking at the system with the idea of optimizing for computer operation.

It is very probable that the time required to write a computer program and subsequently de-bug and run the program on the computer could be measurably reduced if some of the ideas that will be developed below are incorporated into the thinking of people who deal with data processing systems.

Cut Down Program Size

The greatest saving in programming time can be gained through a realization, on the part of both management and data processing people, that computers have certain economical limitations and capabilities.

It is a known fact that computers are nothing more than extremely fast calculating machines that are incapable of performing any operation unless told to do so by a human being. Computers are most efficient when performing high-volume, repetitious jobs with a minimum number of program steps. Conversely, computers are least efficient when performing jobs that require each bit of information to be processed through a large number of program steps.

A major cause of excessive program steps is the inclusion, in programs, of innumerable "*what ifs*" or exceptions — "*What if John Doe's earnings are less than his deductions*"; or "*What if the name rather than the account number is listed*"; etc. Management and also some computer programmers frequently try to encompass too much in the way of logic in programs through the inclusion of all possible exceptions. The net result of such inclusions is an increase in the order of 3-10 times, in the number of program steps required to process the necessary information.

This great expansion in the number of program steps is a direct result of the inability of computers to perform any operations on their own. Unlike the human brain, computers are incapable of taking shortcuts and the inclusion of all possible exceptions in the program means that in most instances the computer will be forced to check each bit of information through each exception routine — a process which necessarily involves a multitude of additional program steps, both to check for and process exceptions, when and if they occur.

Most instances of computer programs for accounting systems being written to encompass decision areas, as well as data processing, have come from lack of understanding of what computers can

By Howard J. Johnson, Jr.



economically do. This is coupled with a desire on the part of operating people to push off the non-routine, messy accounting problems on computers.

If certain exceptions occur with great frequency, it is probably more economical to include them in programs. On the other hand, exceptions that are truly exceptions should be left out of programs. *The simple fact that certain jobs can be better done by human beings than by computers should be recognized.*

Computer programs should be written to include an exception routine which would consist of a few simple tests. Input information would then be checked through this limited routine by the computer and if found to be an unprogrammed exception would be listed out for handling by clerical personnel. Such a check routine would greatly shorten computation time and allow for much greater computer efficiency. The elimination of all *true* exceptions from a program would also greatly shorten the amount of time required to write and de-bug the program; it would immensely simplify any subsequent alterations in the program necessitated by changed requirements.

Viewing Accounting Systems

Any manual accounting system that has operated for a number of years has many variations and quirks that have been added from time to time by operating personnel to satisfy a specific need of the moment and which were never subsequently removed from the system. Computer programmers and accountants have a tendency to view the manual system as it has evolved, and as a result, often lose sight of the fact that what may work very well for people will not be satisfactory for a computer. Square-checks are an example of a manual operation that is very inefficient on a computer. There are usually a number of much better checks that can be applied more efficiently on the computer than the manual checks which are carried over. The net outcome of not looking for the optimal way of handling the data on the computer is a program that is time-consuming in preparation and very inefficient on the computer.

As pointed out earlier, there is a major difference between the way a computer "*thinks*" and operates and the way a human being thinks and works. If a program for a system currently in operation is written to require the computer to handle information the same way it is currently being handled by people, it will be unnecessarily long in order to encompass the necessary logic.

One of the major reasons for changing to an electronic accounting system is to gain the advantages that result from optimizing the handling of accounting information, such as more up-to-date reports, etc. There is probably no better time to optimize a data processing system than when a ma-

jor change, such as computerization, is undertaken.

Since the optimal system for the computer cannot usually be developed if the accounting system is viewed as it presently exists, it is necessary to look at the problem in a way that is better suited for computers. One way of looking at accounting systems, with a view to computerization, is to consider the system to be composed of scalars, vectors, and arrays of numbers — or, more simply, as being a system of matrices. Anyone familiar with matrix arithmetic can readily see that accounting operations are a form of matrix arithmetic.

There are a number of advantages to be gained from looking upon accounting systems as being systems of matrices and accounting operations as being forms of matrix addition, subtraction, multiplication, and division. Principal among these advantages is the fact that sub-routines for matrix arithmetic are already available in most computer libraries. A great deal of time has been spent in perfecting matrix arithmetic and developing programs to deal with matrices (*and vectors and scalars*).

The ready availability of sub-routines for dealing with matrix arithmetic greatly simplifies the job of preparing the programs for computerization of accounting information — if programmers are willing to recognize the fact that accounting systems are actually systems of matrices.

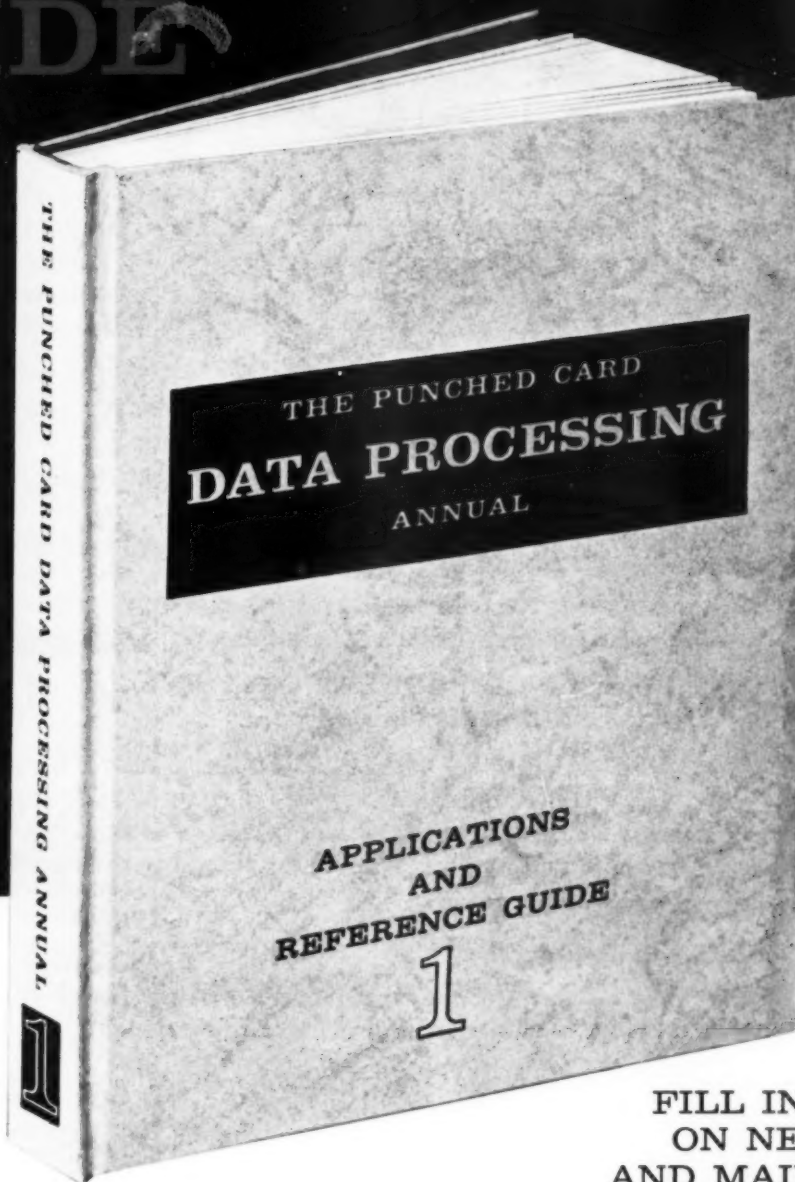
There are times when using matrices will not be as efficient (*as regards computer running time*) as developing an entirely new program. However, this inefficiency, in computation time, is trivial when compared with the time saving that can be effected in getting a new program into operation through the use of matrix sub-routines.

Educate Management

Management and operating people will have to be educated to the limitations (*economical and practical*) of computers before a great deal can be done by data processing personnel to implement the ideas that have been set forth here. The education of management, in this respect, is the responsibility of the people who sell and those who operate data processing systems. The idea of having people do work that can be done by a computer is, admittedly, not an easy one to get across to dollar-conscious management. It is going to become increasingly more important that management perceive these ideas as the demand for computation and programming time increases.

If management can be made to realize that the saving lies in getting 95% of a job on a computer in half the time that is presently required, and doing the remaining 5% by manual methods, then a major breakthrough will be accomplished in eliminating unnecessary time from computer program preparation and operation. ■

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OUTPUTS

WESTERN UNION

Western Union's net income after taxes for the first quarter of 1959 is expected to approximate \$3,470,000, or 55 cents a share, compared with \$2,012,831, or 32 cents a share, in the same period of 1958, reported President Walter B. Marshall, to the telegraph company's share owners at their annual meeting.

"Judging by our load reports for the first few days of April," Mr. Marshall said, "this improved trend is continuing." He noted that earnings for 12 months ending March 31, 1959 are expected to equal \$2.11 a share, compared with \$1.88 a share for the 12 months ending March 31, 1958. He stated that the improvement in Western Union's revenues and earnings which made the last quarter of 1958 one of the best the company has ever enjoyed, is continuing.

COMPUTER TO KEEP BOOKS ON BIGGEST BLUE CROSS ROLLS

Associated Hospital Service of New York (*Blue Cross*) has ordered a Honeywell 800 electronic data processing system to handle the growing volume of detail involved in serving its more than 7,100,000 subscribers.

New York's *Blue Cross* will be the nation's first user of the new equipment, an electronic development which makes it possible to process several jobs simultaneously and to start or stop any one of them independently. A year ago Michigan Hospital Service, the second largest *Blue Cross* Plan, installed an earlier model of a similar electronic system.

The new equipment will process the complete *Blue Cross* record file of more than 3,100,000 contracts at least twice a day, searching out and automatically handling some 65,000 transactions a day. It will "read" 40,000 contract records a minute and print needed office data at a rate of 600 lines a minute. It will verify the enrollment status of hospitalized subscribers and help to determine whether or not they are eligible for benefits. A big part of the system's work load will be the processing of bills sent out and cash received from 10,000 direct payment contract-holders and more than 2,000 groups daily.

ITEMS OF INTEREST FROM HERE AND THERE

SALES AND INVENTORY ANSWERS IN SECONDS

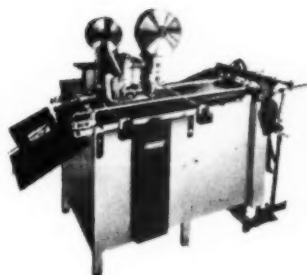
What is probably the first application of an electronic computer system in an electrical components manufacturing concern is giving the company sales and inventory answers in seconds, instead of in 10-12 days under the old system.

The system, an IBM 305 Ramec, was recently installed at The Thomas

& Betts Co., manufacturer of electrical fittings and connectors, Elizabeth, N. J. It does in four steps what it takes the present IBM "off-line" equipment 20 clerical and semi-automatic steps to do.

Ramec records each billing and inventory action as it occurs and updates other related records in the same processing step. Called "in-line" data processing, it eliminates the need for "off-line" accounting work. The time savings of reports and billing will be about one-half that required at the present time. ■

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Custom files are flexible and combinations are available, allowing the purchase of only what is needed to do a specific job. The Wright Line, Inc., 160 Gold Star Blvd., Worcester 6, Mass.



SMALL BUSINESS BOOKKEEPING

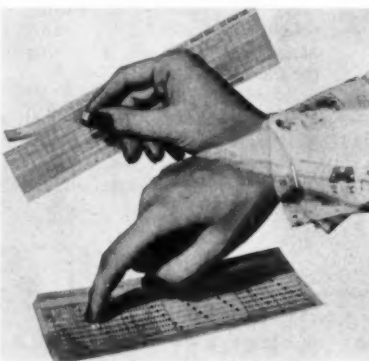
The compact new desk-model bookkeeping machine placed on the market by Burroughs Corporation is said to put highly automatic accounting within reach of small business.

Designed to streamline dozens of pen and ink bookkeeping operations ranging from accounts receivable and payable to billing and report writing, the P612 includes several new automatic features formerly available only in larger, more expensive bookkeeping machines.

The machine's flexibility will permit small businesses to switch to automated accounting without revising their bookkeeping systems.

Totaling, sub-totaling, accumulation of items posted, carriage opening and control of machine functions such as adding, subtracting and dating are among operations performed automatically by the machine without assistance from the operator.

Program units that control the machine's automatic functions may be interchanged in seconds for different bookkeeping operations. And the flick of a key converts the bookkeeping machine to a multiple total electric adding-subtracting-listing machine.



CORRECTION SEALS

A new, permanent, self-sticking correction seal for plugging key punch errors is manufactured by W. H. Brady Co., Milwaukee, Wis.

The transparent seals stick without moistening. They are mounted 216 on a handy dispenser card allowing one-at-a-time, one-motion application to correct key punch errors.

The seals are not affected by humidity or storage, and cannot dry out or fall off corrected cards. Seals register as corrections in verifier. Transparent feature of seals allow operators to sight read information on dual cards or source cards.

ELECTRONIC MULTIPLIER

Digitronics Corp., of Albertson, Long Island, has delivered to the Addressograph-Multigraph Corporation the first prototype of an electronic multiplier capable of multiplying an eight digit variable by any one of five constant six-digit multipliers in an average time of seven-thousandths of a second. Having successfully passed one of the severest acceptance tests ever applied to commercial electronic equipment, the Multiplier will be used to expand the capabilities of Addressograph's Accounting Class 9300 and other machines.

The five constant multipliers are set up manually by means of dials. Selection of one of these five is made automatically by reading coded data on the Addressograph plate. As the hard copy is printed on a punched card, the Addressograph-Multigraph machine perforates the punched card to include the product of the multiplication operation. The entire system is designed for applications such as calculation of dividends and taxes.

A unique feature of the Multiplier is the self-check against error whereby the operands are reversed and the resultant product is checked against the results of the original multiplication. No special air-conditioning is required.

CARBONLESS PAPER

The Supplies Division of International Business Machines Corporation has announced the availability of business forms utilizing a new "carbonless" paper which allows copies of forms to be made without using carbon paper. Now being used in IBM punched card sets, the paper was developed by the Oxford Paper Co. of New York with IBM's assistance.

The new paper makes possible cleaner copies since there is no smudging or carbon transfer to the user's hands. In addition, paper handling is minimized by the elimination of "throw away" carbons.

"Carbonless" paper is pressure-sensitive; no chemical action is involved. Images are produced on its surface by any writing instrument. With the new paper as many as nine

copies can be made at one time, depending on the writing instrument used and the weight of the original document. To aid in distinguishing copies, the paper is available in a variety of colors.

NEW RIBBON FOR TABULATORS

TABULON, a new ribbon made expressly for tabulating machines is now being produced and marketed by Codo Manufacturing Corporation of Leetsdale, Pa.

It is claimed that the new ribbon, featuring a polyamid fiber material known for its super strength, will stand up under the heavy impact of tabulator keys far longer than other fabrics. In addition, the "Tabulon" ribbon is said to deliver consistently sharp impressions, is lint-free, and has built-in ink recovery.

The special ink, Codo Perma-Jet, used in "Tabulon" ribbons is reported to eliminate clogged or sticky type, to flow rapidly through the fabric to re-ink used portions, and because of its jetness, to permit better copies on such machines as Thermo-Fax, Ozalid, Bruning, and others.

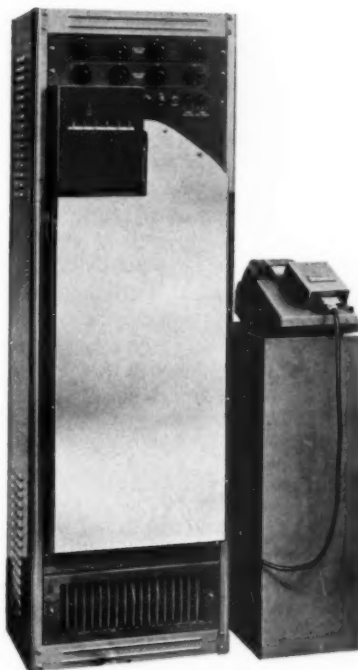
FORMS BURSTER AND TRIMMER

A Forms Burster equipped with a new High Efficiency Trimmer capable of trimming up to 12 piles of fastened control punched forms has been announced by UARCO Inc.

The new unit trims and bursts continuous forms 3 to 17 inches in length at 90 feet per minute. A larger model accommodates forms up to 22 inches in length at the same rate of speed. The new bursters are designed to handle all forms now in

common usage or contemplated in the foreseeable future.

Trimming is accomplished by two shearing wheels which cut margins cleanly and accurately within a tolerance of $\frac{1}{64}$ of an inch. These wheels are protected by transparent plastic shields that cover the mechanism and assure trouble free operation. Two pinfeed units hold forms in alignment. Trimmers can be adjusted to trim one, both, or neither control punched margin. UARCO Inc., 7902 S. Ashland Ave., Chicago 20, Ill.



TRANSISTORIZED ANALYSIS SYSTEM

Development of a new high speed transistorized analysis system that requires no special-trained programming personnel has been designed by the Victor Adding Machine Co., Electronic Section.

Called the Victor Class 100, this system allows businesses to meet the problem of computing detailed cost, sales and inventory figures. This system is composed of a central program unit to which is connected a Digit-Matic printer. It processes raw data in random form from punched tape, which is the by-product of a previous operation.

The actual processing of data is initiated by an operator who inserts the punched tape into the program

reader, selects the program and depresses the start button.

Reading at the rate of 1,000 digits per second, the program reader "selects" and adds related figures, then transmits them electrically to the Digit-Matic. The Digit-Matic accumulates the figures and produces a detail strip (*printed receipt*) with totals that are identified.

SOLID STATE, HIGH SPEED ALPHANUMERIC PRINTER

The Potter Model 3260 Alphabetic Printer is an integrally housed drum type printer and electronic storage and control system which is suited for rack or desk mounting. It can be connected to many data producing devices with a minimum of installation effort. Data can be accepted from any source of digital information—such as digitizers, magnetic or perforated tapes, electronic counters or computers.

A printout rate of 48,000 digits per second is possible with this design. As a logger of digitized data from a series of analog to digital converters, a scan and printout rate of 200 three-digit numbers is realizable.

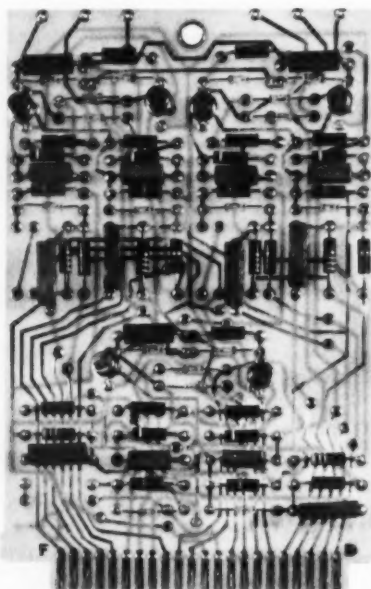
Type is arranged horizontally and blank spaces can be provided between characters permitting ease of reading. Despite rapid printing speed, vertical displacement of characters is negligible. Type faces are made of long-life stellite and up to 63 characters are available in alphabetical, numerical and special symbols in any desired combinations.

Printing is on multiple copy fan-

(continued on next page)



fold paper with standard ribbon. Up to four copies are possible and no adjustments are required for paper thickness or ribbon width. Potter Instrument Company, Inc., Plainview, N. Y.



PLUG-IN FLIP-FLOP PACKAGE

The DYKOR plug-in flip-flop package model FF3 is one of a line of over thirty types of transistorized modular logic cards now available. The cards are compatible and offer simple handling of a wide range of logical problems. Efficient circuitry and packaging result in high circuit density and low cost per circuit. Up to eight circuits per card are provided on some units.

Model FF3 contains three Eccles Jordan flip-flops. Non-linear feedback diodes are used to ensure reliable interchangeable operation without undue sacrifice of speed. Threshold bias provides effective noise discrimination. Clamping diodes are provided on both outputs to give a stable voltage level with low output impedance to minimize the effects of capacity loading.

The DYKOR series of printed circuit logic cards use germanium diodes and transistors conservatively rated to operate up to 65°C ambient temperature. The circuits are designed to operate at input signal levels of -0.5 volts to -4.5 volts, permitting the use of passive diode logic. Operating frequencies range from DC to 500 KC. Digitronics Corp., Albertson Ave., Albertson, L.I., N.Y.



DUAL PRINTER SENSIMATIC

A new machine specifically designed for banks that prefer simultaneous and original printing on a combined ledger and statement form with conventional bookkeeping equipment has been announced by Burroughs Corporation of Detroit. In a single posting operation, identical data is printed on both sections of the combined form with the F5212 Dual Printer Sensimatic.

Logically designed forms also provide posting economy in that a check and a deposit, or two checks and a deposit with analysis, require only one printing line, thus saving forms usage.

The F5212 incorporates such features as automatic balances, multiple-total adding and subtracting, electric column selection, simplified data input, correction control, automatic four-digit check count and an automatic account counter.

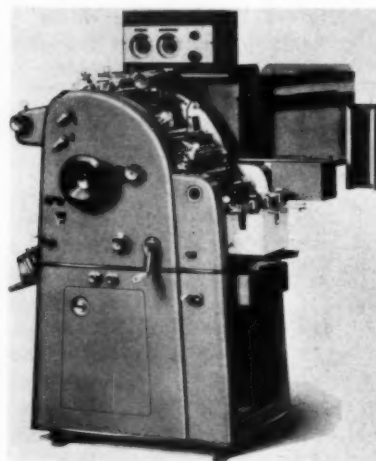
IBM SERIES 1200 + RAMAC 305

The coupling of International Business Machines Corporation's new bank automation equipment with its random access computer, the IBM Ramac 305, was reported by the Data Processing Division.

Using the Series 1200 character sensing equipment in conjunction with Ramac means that checks can be processed and posted as they are received. The system can perform posting in account sequence. In either case, accounts are kept up-to-date and peaks of accounting activity at statement time are reduced.

Compatibility of Series 1200 equipment with the 305 computer was made possible by the development of a new sorter-reader which can sort paper checks and deposit slips into

desired sequence at the rate of up to 900 per minute. It can also read magnetic ink data from each document directly into the Ramac for processing. Other elements of the bank automation system are a proof inscriber, a utility inscriber, and a control unit. (See Mar./Apr. issue.)



OFFSET DUPLICATOR

A high-speed automated offset duplicator with a large image area of 10½" by 16½" represents the third automated offset unit introduced by A. B. Dick Company in less than a year.

Known as the A. B. Dick Model 365 offset duplicator, the new machine makes it possible to duplicate large-sized forms at the rate of four complete systems jobs per minute.

The machine will automatically feed impression paper ranging in size from 3" x 5" to 11" x 17". The greater image area will permit the duplication of engineering drawings, accounting reports, as well as other out-sized systems forms.

The machine is designed especially to handle repetitive duplicating, which is increasingly required for paperwork systems such as scheduling, production and factory orders, purchasing and receiving, sales order-invoice, inventory and cost control.

Operating cycle of the machine is "commanded" by a program control unit which delivers the exact number of copies dialed by the operator at the start of a run, for as many runs as required.

The operator performs only two manual operations after setting the program control unit; a change of

masters and a flip of the starting lever. The program control unit then takes over for the manual steps required with non-automated equipment.

Said to be the fastest machine of its type available, the machine will produce at a rate of 9000 copies an hour, depending on the type of duplicating performed. A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31, Ill.



FIREPROOF EQUIPMENT FOR PUNCHED PAPER TAPES

Shaw-Walker has developed fireproof equipment for punched paper tapes by bringing both the tapes and vault protection to the machine.

Made in two models, this Fire-File equipment will house up to 10,000 punched paper tapes. The smaller model will fire-protect up to 6,000 tapes, 2,000 per drawer.

For smaller requirements, the top drawer can be used for tapes and the other drawers for related records. To assure maximum security, the new Fire-Files are equipped with signal plunger paracentric key lock embedded in the insulation. Shaw-Walker Company, Muskegon, Mich.

BURROUGHS CORPORATION MICR BANKING EQUIPMENT

Magnetic Ink Character Recognition, a common language principle adopted by the American Bankers' Association for coding checks and other bank documents, has been spotlighted by Burroughs Corporation of Detroit, Mich.

The Magnetic Character Sorter, which sorts checks at rates in excess of 1,500 items per minute, is one of an entire family of machines which will provide the banking community with varying degrees of automatic systems for handling and processing of documents.

The common language type font is

a series of unusual looking numbers and symbols which are imprinted in magnetic ink on checks and deposit slips. These numbers can be read by you—and by the Burroughs electronic machines.

Burroughs has developed machines so that banks may enter automation all at once or by a gradual step-by-step process. In either case all of the desired equipment blends into an integrated system.

Included in the Burroughs' Magnetic Ink Character Recognition pro-

gram are the magnetic character sorter, magnetic imprinter, magnetic amount and account number printer, electronic accounting machine, the proof and distribution machine, and the 205 and 220 data processing systems.

Magnetic Character Sorter

The Magnetic Character Sorter, which moves paper documents 400 inches a second, automates the sorting of deposit accounting media. Its operation is 10 times faster than

(continued on next page)

**GLOBE
PRECISION**

TABulating Machine CARDS call for the closest precision from start to finish. Our factories give this precision all the way... initial layouts, drafting, type-setting, engraving and production come under the strictest inspection. Even packaging and shipping get precision handling at all Globe Ticket Company plants.

(You can have immediate delivery on many stock cards)

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Sales Offices throughout the United States • Consult your telephone directory
Seven factory locations as follows—
Atlanta 10, PL 5-7725 • Boston 15, CO 7-4380 • Dallas 35, PL 1-3795 • Denver 16, KE 4-8886
Philadelphia 7, LO 7-2888 • Tacoma 4, GR 4-4721 • Los Angeles 13, MA 7-7887



manual sorting by one person.

Maximum sorter efficiency is obtained through grouping of the machine's controls and conveniently placing all necessary operations within an area nine feet long. The sorter contains 13 destinations—10 digital-sort pockets, two special item pockets and a reject pocket.

Paper or card checks of varying sizes and thickness, as well as those that have been mutilated, may be processed through the sorter. Items can be intermixed and do not require jogging prior to being placed in the machine.

Magnetic Imprinter

The Imprinter utilizes magnetic ink to code checks, deposit slips and other documents to adapt them to electronic sorting and other operations. Printing in the new common language characters, it provides for the precise positioning of the account number and imprints the customer's name and address.

An automatic feeder, adjustable to handle all standard sizes, has a capacity of 500 items.

Amount and Account Number Printer

The Printer accomplishes the first step in the electronic processing system after checks have been received in a bank. This device prints the dollar amount and the transaction code in magnetic ink on the face of the check.

With this equipment, the proof function and amount coding may be combined in a single and initial handling of each item. Subsequent operations of handling, processing and recording can be carried out automatically without further manual keying of the amount.

Proof and Distribution Machine

This machine proves and distributes deposited items being received from and being sent to other banks. The department in which these machines are used is the control center of the modern bank. The new machine also provides for printing dollar amounts and other coded information in magnetic ink on checks as they are processed.

Designed as part of the integrated bank system, this machine is a departure from present proof operations in that it acts on orders electronically activated from a master control unit. Decisions and operations previously made by operators are accomplished automatically by this new device.

Electronic Accounting Machine

This device uses electronic components and magnetic code stripes on ledger forms to perform most of the

posting operations without assistance from the operator.

Key to the electronic controls is the use of the stripes printed in magnetic ink on the back of the ledger sheets. These magnetically store the account number, item count and account balance with sign, line selection, alert notice and code checking information.

This enables the machine to automatically align the form to the correct posting line. It then reads the old balance, reads and progresses the check count, extends and prints the new balance, and ejects the statement.

Automatic Reader

A companion piece to the electronic accounting machine is the automatic reader. When the two are connected by cable, the automatic reader will provide complete automatic trial balance listings. In the balance transfer operation, old statement sheets are automatically handled by the automatic reader as the operator introduces new statement forms in the electronic accounting machine.

A completely automatic system for larger banks is possible with the Burroughs 205 or 220 electronic data processing system. Information from the coded magnetic ink documents is fed into the system through input devices. Sorting, proving, posting and ledger handling are accomplished by storage of the data on magnetic tape.

Data, such as that required for month end customer statements, may be printed out automatically. ■



PEOPLE AND PLACES

IBM PROMOTIONS

IBM has announced the appointment of WALLACE C. DOUD as assistant director of commercial development. He will report to James W. Birkenstock, IBM vice-president in charge of commercial development. WILLIAM J. LAWLESS, Jr. was named executive assistant to executive vice president Albert L. Williams, the post formerly held by Mr. Doud.

DENNISON PROMOTION

Dennison Manufacturing Company of Framingham, Mass., announced the appointment of FRANK T. GEROULD as Merchandise Manager of its Machine Systems Division. This division is responsible for the design, development and merchandising of Print-Punch, Dial-Set and Pinning Machines, and their respective tags, labels, or tickets for retail and industrial systems applications.

AERONUTRONIC FACILITIES

Gerald J. Lynch, president of Aeronutronic Systems, Inc., west coast subsidiary of Ford Motor Company, revealed plans for additional new construction at the firm's 20-million dollar Research Center now building on a 200-acre site overlooking the Pacific Ocean at Newport Beach, Calif. His statement follows an announcement earlier this year that construction was proceeding far ahead of schedule on a 120,000 square-foot computer-electronics facility that will be the home of Aeronutronic's Computer Division. Full occupancy of the ultra-modern plant is expected by mid-year when major elements of the Division will move from temporary facilities in Santa Ana, Calif.

According to President Lynch, new facilities slated to start construction immediately or in the design stage, are a second 120,000 square-foot building to be occupied by the firm's Space Technology Division, an Environmental Test building for use by all divisions of the Company, Central Services building center and employee cafeteria, and a multi-story Administration facility. "In excess

of 540,000 square-feet of new construction will be completed by July, 1960," Lynch said, "and an additional half-million feet by the end of 1961."

Basic development of the 200-acre Research Center was started in December, 1957, one year after the company was founded by Ford Motor Company. Already completed and in operation are facilities for an Aerothermochemical Laboratory, a series of test cells devoted to military research and experimental work related to classified military projects, a general test building and a high altitude vacuum test chamber utilized for outer-space environmental testing.

BURROUGHS REALIGNMENT

Burroughs Corporation has completed a major reorganization of marketing operations re-aligning sales and service forces to meet the rapidly growing needs and demands of electronic banking, Ray R. Eppert, President, has announced.

Burroughs Division, largest operating unit of the firm, has been given the responsibility for the sale and service of computers produced by ElectroData Division for banks and other financial institutions.

Backing up its broader responsibilities to the banking field, Burroughs Division has established a completely new financial sales department with overall responsibility for the sale of Burroughs-built equipment to banks. It will be aided by a newly established product support group. The new departments will work through established local Burroughs branches.

Burroughs Division's service or-

ganization has also been re-organized to provide specialized product support for banking equipment.

REMINGTON RAND PERSONNEL NOTES

RICHARD P. CASTANIAS has joined the Remington Rand Division of the Sperry Rand Corporation as a West Coast representative of the vice president of Univac scientific systems. He will work out of the San Francisco office, but will report directly to Dr. Howard T. Engstrom, vice president, in the company's New York City headquarters.

DR. HERBERT MITCHELL, JR. has been appointed West Coast representative of the vice president for sales, Remington Rand Univac Division. His office is in Los Angeles, but he will report directly to Howard V. Widdoes, vice president, in the New York City headquarters.

JOHN D. HAZZARD has been named general sales manager of the Remington Rand Univac Division. He joined the company in 1942. In 1957, he was named assistant general sales manager for the Univac Division, a position he has held up to his present appointment.

ANDREW T. FISCHER has been named director of product planning of the Remington Rand Univac Engineering Division. Mr. Fischer has had many years of experience in the electronic data processing field, both in engineering and sales management capacities. He has been with International Business Machines Corp. and the Radio Corporation of America.

(continued on next page)

Announcement...

**Punched Card
DATA PROCESSING**

to be issued
MONTHLY

Starting with the Jan. 1960 issue

IBM OPENS NEW WESTERN REGION HEADQUARTERS IN LOS ANGELES

International Business Machines Corporation officially opened a new Western Headquarters in Los Angeles which will be the center of the company's operations in the 11 western states, Texas, Alaska and Hawaii.

The new Western Headquarters Building will house members of the company's regional Data Processing Division staff, a district office serving Southern California, Nevada and Arizona, the Los Angeles Wilshire branch sales office, and personnel of four other company divisions—Electric Typewriters, Military Products, Supplies, and Special Engineering Products.

AUTOMATION EXPOSITION POSTPONED

Management for the Fifth International Automation Exposition and Congress has announced postponement of the show scheduled for the New York Trade Show Building, November 16 to 20, 1959. Reasons for the postponement were not detailed, although it was hinted that the current anti-automation attitude of labor and some management played an important role in the decision. The show will be rescheduled for 1961.

COMPUTER EXPERTS

A group of eight Russian computer experts and mathematicians arrived in New York for a two-week tour of U.S. industrial and educational data processing facilities. They will see how American commercial and scientific computers are manufactured and used and will meet with American computer scientists.

The Russians' visit has been arranged by the National Joint Computer Committee as part of a cultural exchange program under the auspices of the State Department. A group of American computer scientists representing the National Joint Computer Committee will make a reciprocal visit to the Soviet Union.

The visitors will begin their U.S. tour at the manufacturing and research facilities of International Business Machines Corporation at

Poughkeepsie, N. Y. where large-scale data processing systems are produced by assembly line techniques. They will then go to Boston to visit the Massachusetts Institute of Technology and Harvard University.

SPA'S RE-APPOINTMENT

The Systems and Procedures Association announced that DAR E. TISDALE, Executive Secretary of the Association, has been re-appointed to a four year term.

Mr. Tisdale became SPA's first Executive Secretary in April 1956, joining SPA direct from private industry.

The SPA, formed in 1944, is an international professional organization of administrative executives serving management of business, commerce, education, government and the military. Engaged in a continuous program of research, study, education and training in the fields of management practices, systems and procedures, and organizational techniques, the SPA encourages direct contact among systems specialists to develop and promote the exchange of ideas and technical data. Organized on an international basis, the group reaches some 2,700 members through 60 local chapters in major cities in the United States, as well as chapters in foreign countries.

GENERAL T. C. ODOM IN IBM SYSTEMS MANAGEMENT POST

Major General T. C. ODOM (USAF Ret.) has been appointed director of systems management for the Military Products Division of International Business Machines Corporation.

In making the announcement, Charles Benton, Jr., general manager of the division, said that the new systems management department headed by General Odom, combined with the division's strong technological, fabrication and support elements, will provide outstanding capability for performance of electronic systems management from research and development through product support.

S.R.I.

Dr. Wallace Sterling, president of Stanford University and chairman of the board of directors of Stanford Research Institute, announced two

major changes in the Institute's corporate title structure.

E. FINLEY CARTER, SRI director, has been named to the newly-created post of president, and will serve as a member of the executive committee of the board of directors.

WELDON B. GIBSON, associate director, has been named vice-president and member of the board of directors.

In making the announcement Dr. Sterling said, *"These actions have been taken in response to the growing size and scope of the Institute's activities, and in recognition of the stature — both national and international — which it has achieved."*

The Institute's relationship with the University, Dr. Sterling explained, is not affected by this board action.

NEW FARRINGTON EXECUTIVE

RUSSELL HARRELL has joined the Farrington Corporation of Needham, Mass., as executive vice president. He was formerly associated with Reader's Digest of Pleasantville, N. Y., where he guided the installation of electronic file maintenance, subscription fulfillment and addressing systems. Prior to this he was a member of the Ernst & Ernst systems planning staff.

NOTES TAKEN AT THE NMAA CONVENTION, ST. LOUIS, JUNE 24-26

Over 2000 attendees sweltered in the humid June heat of St. Louis as the National Machine Accountants Association had the frustrating experience of (a) approving a name change to "Data Processing Management Association"; (b) discovering that the name was already in use by a small group in Texas, and (c) deciding to continue using their present name for the next six months until the board of directors meets again. The association emblem will change to a cluster of symbols including a punched card, a reel of tape and an atomic symbol.

A movie which burlesqued data processing was good for laughs. This film will be available for distribution in the fall. Closed circuit television displayed three local computer installations and field trips included a tour of the punched card and other departments of a brewery, and St. Louis, all in that order.

Seminars on punched card and computer applications proved once again to be the most valuable aspect of the show for those industrious enough to participate.

Among the exhibitors . . . Remington Rand Univac 80 solid-state computer attracted a lot of attention as did the IBM 409 which punches and prints into the same card for utility billing, premium notice and subscription promotion work. The major forms companies showed bursters, decollators and unique forms including continuous envelope and punched card sets. Monroe showed their verifying key punch while Friden, Burroughs, Systematics and NCR exhibited most of the paper tape devices. Service bureaus and card and ribbon suppliers rounded out the exhibitors, all of whom agreed that these annual conventions should be held in May to beat the heat.

The following is an extract from the keynoter's message. General Leslie R. Groves, Vice President of Remington Rand, expressed these thoughts about "Facing the Time Barrier."

"This is an ever present problem for all of us, from the earliest school days, when every effort seems to be made to turn us into clock watchers, to the time that eventually comes to all when we are waiting for our time on earth to run out. To the executive who is responsible for the efforts of others, it is most pressing.

"Time is not the problem of a single individual or of a single group. Education, research, business, government and industry all face it. So does the whole free world, and so, too, do our Communist opponents. Who has not heard of the five-year plans and the many failures to reach the planned results? Our own problems are merely typical of the time barrier standing before responsible men throughout the entire world.

"With the increasing complexity of government and corporate management, it has become more vital than ever before that management be furnished with the means whereby it can make intelligent decisions. New electronic data handling systems now in use, and those being developed, will make it possible for the average manager to increase his value to his organization to a superior degree." ■

DATA . . . yours for the asking

For your convenience in obtaining pertinent and helpful information on the latest equipment, forms, services and related products in the data processing field, we direct your attention to the following free literature available from the manufacturers.

MAGNETIC INK PRINTING is explained in a 16-page booklet which outlines in simple terms the American Bankers Association program for Magnetic Ink Character Recognition, leading to automatic check handling. To meet the requirements for re-design of checks presently in use, made necessary by the ABA program, Autographic is making a free form-design service available to continuous and unit set check users. For copies of the booklet and further information, write to: Autographic Business Forms, Inc., 45 E. Wesley St., South Hackensack, N. J.

BENDIX PAPER TAPE READER (Model PR-2) is described in an illustrated data sheet. Used in combination with the Bendix G-15 general purpose digital computer, the photoelectric reader accepts paper tapes punched in any numeric code. Request copies from Bendix Com-

puter Division, 5630 Arbor Vitae St., Los Angeles 45, Calif.

MAGNETIC TAPE TRANSPORT, Model 546, is described in a four-page brochure. Designed for use with digital computer and control systems, the Model 546 features vacuum-controlled reel servo system. Write Burroughs Corporation, ElectroData Division, Public Relations Department, 460 Sierra Madre Villa, Pasadena, Calif.

HONEYWELL 800 COMPUTER and the factors of application of this newest all-transistorized electronic computer system to scientific problems are described in a new booklet. Herein outlined are the speeds, capacities and over-all performance qualifications of the system with specific examples of how its design logic and other features contribute to its use and economy in scientific computation. A copy of this booklet, "Honeywell 800 — A Superior Scientific Computer," may be obtained at no cost by writing Honeywell's Datamatic Division, 151 Needham St., Newton Highlands, Mass.

SYNCHRO-TAPE TYPEWRITER, and the advantages of common

(continued on next page)

GILLE ASSOCIATES, INC.
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For new subscriptions to Punched Card DATA PROCESSING

Please enter the new subscription for the period indicated below:

☐ One year—\$7.50 ☐ Two years—\$13.50 ☐ Three years—\$19.00

*To be issued monthly starting January 1960.

Name _____ Title _____

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Company _____

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Payment Enclosed

(Foreign except Canada, add \$1.00 per year.)

language tape and edge-punched card machines, are described in an eight-page booklet. These tapes coordinate inter-office automation and communication through automatic wire transmission data. Tapes or cards provide automatic input of selected data for processing many business transactions, create composite tapes for conversion to punched cards, and provide automatic input to electronic converters. Copies of this booklet (TR-8986) may be obtained at any Remington Rand branch office or by writing the company at 315 Fourth Ave., New York 10, N. Y.

DAILY LOADING and ROUTING problems, as solved by Green Spring Dairy, Inc. of Green Spring, Md. by the use of a Univac 60 punched card electronic computer, is the subject of a new 12-page Univac Narrator just published by Remington Rand Division of Sperry Rand Corp. Copies of this Univac Narrator can be obtained at any branch office, or by writing to the company at 315 Fourth Ave., New York 10, N. Y. and requesting UN-1212.

LYNCHBURG FOUNDRY COMPANY case history which describes the use of the Univac 60 punched card electronic computer and allied equipment has just been published. The system, selected by a representative committee of the company after several man-years of study, replaced a large battery of typewriters, adding machines, and calculators that had become obsolete as a result of increasing workloads. A copy of this case history can be obtained at any Remington Rand branch office or by writing to the company at 315 Fourth Ave., New York 10, N. Y. and requesting UC-911.

FORM PRINTER, Clary Model 1941, prints electronically controlled data on pre-printed forms. The forms printer, an extension of Clary's parallel-entry data printer, has a paper transport mechanism which precisely positions the pre-printed forms in accordance with a previously established printing format. The ten-page brochure, S-112, may be obtained by contacting Electronics Division, Clary Corporation, 408 Junipero St., San Gabriel, Calif.

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PCDP BOOK SHELF

ELECTRONICS IN ACTION, The Current Practicality of Electronic Data Processing, Elizabeth Marting, Editor, American Management Association, Inc., 1515 Broadway, New York 36, N. Y., 1957, 156 pages, \$3.75 (\$2.50 to members).

Special Report No. 22, based on the third annual electronics conference sponsored by the A. M. A., consists of the papers delivered at this conference. The book is divided into three pertinent areas: Feasibility Studies, Electronics at Work and New Frontiers. This last area is most interesting in that it deals with the "future ramifications of automation." Inasmuch as the future of that time is now "the present," it is interesting to see that the recent recession was not apparent or anticipated. To this extent normal development was retarded.

CREATIVE THINKING by Charles S. Whiting, Reinhold Publishing Corporation, 430 Park Ave., New York, N. Y., 1958, 168 pages, \$3.95.

This is the first in a series of management science publications by Reinhold Publications. On the face of it, it would seem that this book is not relevant to the field of punched card data processing. It is concerned with the utilization of brainstorming and allied techniques to develop sound and imaginative management policy. The major portion of the work is concerned with the techniques for stimulating and effecting creative thinking. Since in the field of automation imaginative thinking and planning are highly important, this book is recommended.

OFFICE WORK AND AUTOMATION by Howard S. Levin, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 1956, 203 pages, \$5.50.

A salient theme of this volume is the emphasis on changes taking place in the contemporary office. To be sure, the concepts so commonly recognized and utilized today were not so common or generally accepted three years ago when this book was published. This point alone highlights the dynamic aspects of automation. Nonetheless, many of the principles discussed in this work are still applicable and probably always will be. *Office Work and Automation* remains a good primer for the neophyte entering the field, especially the member of management who is or will very shortly become involved in automated information handling techniques in the office.

SYSTEM ENGINEERING — An Introduction to the Design of Large Scale Systems, by Harry H. Goode and Robert E. Machol, McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y., 1957, 551 pages, \$10.00.

For the most part, this volume is too technical for the non-scientifically trained individual. There are, however, several good chapters for the non-scientist in the very beginning of the book. Beyond this point, the authors go into techniques and formulae used to develop a computing system. Many of the tentative designs are first developed, tested, etc., on an existing computer. In this way, many of the engineering principles can be used to optimize function, control, design and cost of the eventual finished product. To systems engineers, involved in the design of computing systems, the book has a wealth of information and examples throughout.

IDEAS FOR MANAGEMENT — Papers and Case Histories presented at 11th International Systems Meeting, Edited by Colver Gordon, Systems and Procedures Association, 4463 Penobscot Bldg., Detroit 26, Mich., 1959, 440 pages, \$16.00 (\$10.00 to members).

This is the complete array of papers delivered and seminars conducted at the eleventh annual international meeting at Buffalo, New York. The

first part of the volume is concerned with the systems association and the business conducted by the various chapters. One of the most interesting sections, entitled "World Systems," presents some interesting observations of systems and concepts employed elsewhere in the world. Some of the papers are concerned with factory automation and paper processing. However, the principles utilized are most certainly widely applicable. One or two of the papers are somewhat wordy but all in all, it is a worthwhile reference work for the punched card data processing library.

■ ■ ■

Coming in the September/October issue . . .

SPECIAL REPORT

APPLICATIONS IN USE Punched Cards - Punched Tape - Computers

A Summary of the Survey we have recently conducted on data processing functions most often performed with each type of system. Nearly 2500 companies and institutions participated to make this the most detailed and complete study of its kind ever presented.

The complete report, detailed by every major industrial classification, will appear in *The Punched Card/Data Processing ANNUAL*, which is now in production.

Special Feature for the September/October issue —
OPERATIONS RESEARCH

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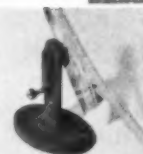
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Self-Audit for the Punched Card Department

DID YOU EVER MEET A PUNCHED CARD SUPERVISOR who doesn't work hard? Did you ever meet one who doesn't have a little bit of trouble in getting his story across to his boss?

We have never seen a survey that gave percentages and we don't mean to infer that the supervisor should work smarter and not harder (*or do we?*) but there would probably be little contradiction that the emphasis on trivials is one of the major reasons why punched card systems are not being exploited to their utmost.

Although some companies do a thorough data processing job there must be a reason why many companies use punched cards for billing but not for accounts receivable or for production control but not for billing, or that they automated payroll but it didn't work out. Granted, some of the explanation is inter-company politics, or *"In our company, it's not practical because we're different from all other companies who successfully automate these functions."* You will probably agree, even though on occasion you've used one of these dodges yourself to justify a conclusion, that the real reason in many cases is due to a lack of effective communication between department heads or to an overload of trivial work which did not permit adequate planning or supervision of the conversion from manual to automated systems.

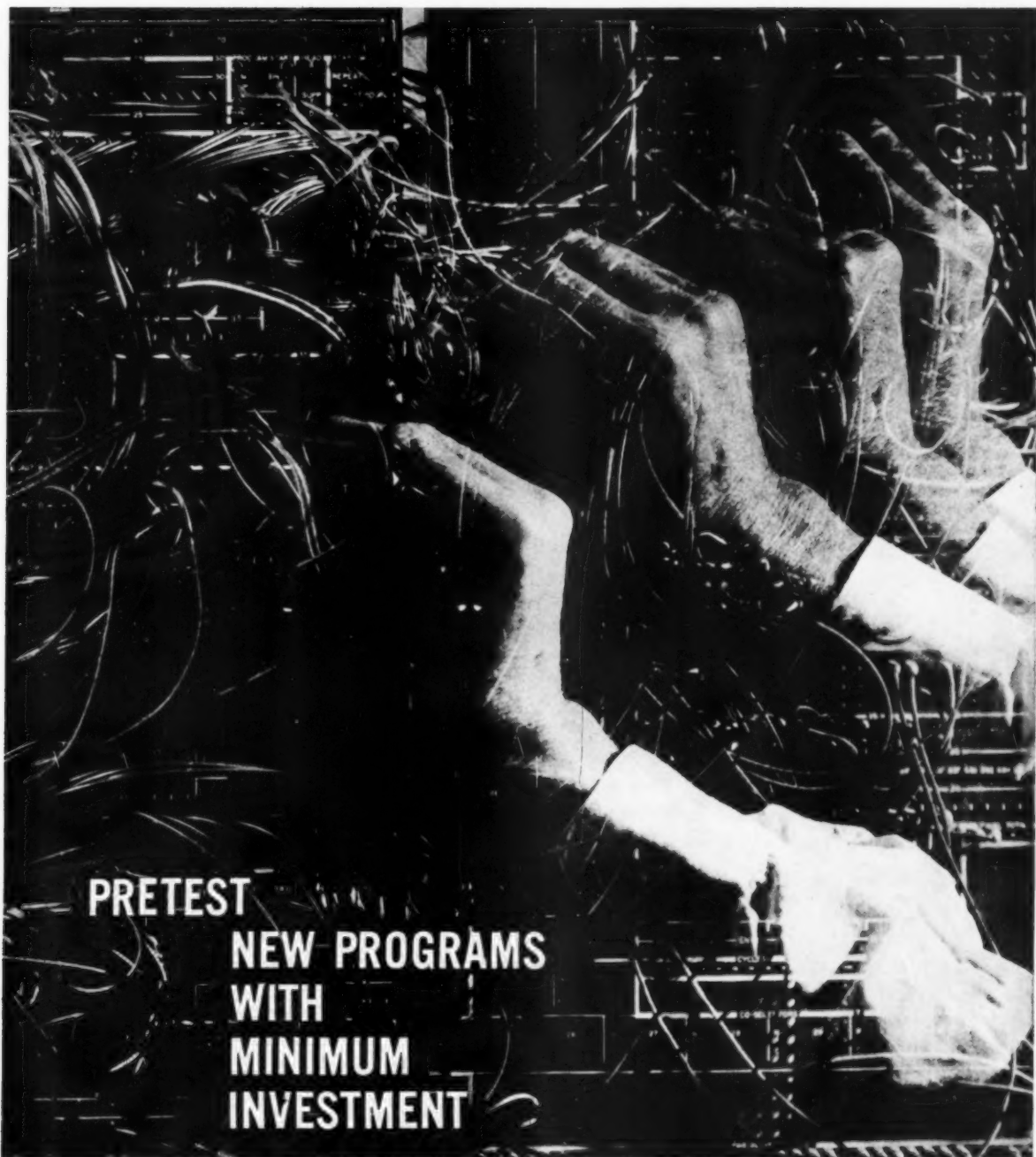
It's not always easy to perform a self-audit but one of these days someone is going to publish a form whereby a punched card supervisor can rate himself on how well he is doing the job in each of his areas of responsibility. Was it Socrates or Hollerith or some other pioneer who said, *"Know thy self"*? In the meanwhile, he'll have to settle for a fifteen minute a day seclusion from day-to-day work to evaluate what it is that he could be doing to improve operations.

Our guess is that there is hardly a punched card department that couldn't be improved by having another qualified supervisor review it critically. Why don't supervisors or their bosses arrange such a switch between friendly companies to avail them-

selves of free consulting services? From our recent survey of several thousand punched card users we were surprised to learn that a large percentage of companies employing over 100 clerks use equipment that rents for less than \$2,000 a month. Doesn't this hint that there are some functions still being done manually that could be automated? This suspicion is confirmed by another portion of the same survey which shows that many companies would like to see more of the manual functions automated. In these cases it would appear that equipment developed has pulled ahead of procedure development. Equipment available ten years ago could be used to automate these jobs. What chance do computers have of improving the data processing of a company which has not yet benefited fully from conventional punched card equipment? ■

By Eugene F. Murphy





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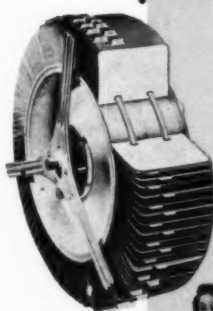
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